ATTACHMENT A

PLACER COUNTY COMMENTS
ON THE
JULY 2010 TENTATIVE
WASTE DISCHARGE REQUIREMENTS AND
CEASE AND DESIST ORDER
FOR
PLACER COUNTY DEPARTMENT OF FACILITY SERVICES
PLACER COUNTY SEWER MAINTENANCE DISTRICT 1
WASTEWATER TREATMENT PLANT
PLACER COUNTY

Submitted August 9, 2010

I. Effluent Limitations for Aluminum

Summary

The County contests the Regional Water Board's application of the U.S. EPA's 87 µg/L chronic aquatic life criterion to the SMD 1 WWTP for NPDES permitting. This has been addressed in previously submitted County comments on the Preliminary Draft Order, previous Tentative Order, and the May 2010 NPDES permit adoption hearing. Comments by Regional Water Board staff as well as U.S. EPA Region 9 have raised questions regarding a number of issues, including whether new information has been developed since the adoption of the current SMD 1 WWTP permit to justify changing the Regional Water Board's previous conclusion that the 87 µg/L is applicable to the SMD 1 WWTP discharge. Substantial new information exists now that did not exist when the current SMD 1 WWTP NPDES permit was adopted in 2005, including:

- Effluent and receiving water data collected since 2005, which affirms that the low hardness and pH conditions to which the 87 µg/L criterion applies do not exist at the site.

- A June 10, 2010 letter from Charles Delos, U.S. EPA Headquarters, Office of Water, Criteria Division technical expert on the aluminum criteria and its application, which interprets the new effluent and receiving water data and affirms his previous conclusions in 2001 and 2002 that 750 µg/L is an appropriate criterion for the SMD 1 WWTP site.

- The Arid West Water Quality Research Program (AWWQRP) report published in 2006 (funded by U.S. EPA Region 9), *Evaluation of the EPA Recalculation Procedure in the Arid West Technical Report*, that includes re-calculated (i.e., updated) aquatic life criteria for a number of constituents, including aluminum.

- Results from an aluminum water-effect ratio (WER) sample event for SMD 1. The WER was >13.7, which when applied to the 87 µg/L criterion results in a WER-adjusted chronic criteria of >1,192 µg/L. This indicates that there is no risk of toxicity to aquatic

life in the receiving waters due to SMD 1 discharges, which have a maximum aluminum effluent concentration of 162 µg/L.

The remainder of this comment provides details regarding the new information above, as well as an overview of the County's comment history regarding aluminum, background on aluminum criteria and its applicability to the site, and address of degradation and anti-backsliding concerns.

Overview

California has no adopted numeric criteria or objectives for aluminum. Thus, the Regional Water Board has applied, in a "best professional judgment" manner, the U.S. EPA's 1988 recommended aluminum criteria to provide a numeric interpretation of the Basin Plan's narrative toxicity objective for permitting the SMD 1 WWTP discharge. The County contests the manner in which the Regional Water Board is applying the U.S. EPA aluminum criteria to the SMD 1 WWTP site and receiving waters and the resulting aluminum limitations in the Tentative Order.

The County initially commented on the aluminum limitations proposed for the SMD 1 WWTP NPDES permit when the Preliminary Draft Order was issued. Additional comments were provided when the March 11, 2010 Tentative Order was issued in response to a change in rationale for the limitations. Testimony was provided by our consultant, Dr. Michael Bryan of Robertson-Bryan, Inc. (RBI), during the May 2010 Board permit adoption hearing. The previous comments and testimony by Dr. Bryan cite letters from U.S. EPA Headquarters regarding the application of the U.S. EPA aluminum criteria to the SMD 1 WWTP site. Since the May 2010 Board hearing, U.S. EPA Headquarters has provided an additional letter regarding the application of aluminum criteria to the SMD 1 WWTP site. Also, the U.S. EPA Region 9 has since provided its own letter regarding the permitting of aluminum for the SMD 1 WWTP. In addition, the County has developed new technical information by completing an aluminum water-effect ratio (WER) sample event.

U.S. EPA Aluminum Criteria Background

The U.S. EPA published National Ambient Water Quality Criteria (NAWQC) for aluminum for protection of freshwater aquatic life in 1988 (EPA 440/5-86-008; August 1988). The recommended 4-day average (chronic) and 1-hour average (acute) criteria are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0. As stated on p. 6 of the aluminum NAWQC document:

> *"Thus, the Final Chronic Value for aluminum is equal to the Criterion Maximum Concentration of 748 µg/L for fresh water at a pH between 6.5 and 9.0 (Table 3). Data in Table 6 concerning the toxicity of aluminum to brook trout and striped bass show that the Final Chronic Value should be lowered to 87 µg/L to protect these two important species."*

The U.S. EPA lowered its initially derived 748 µg/L Final Chronic Value to 87 µg/L based on two tests, one with brook trout and one with striped bass, at low hardness (10-12 mg/L as $CaCO_3$) and low pH (6.5-6.6) (EPA 440/5-86-008, p. 22, Table 3). The 87 µg/L value was considered necessary for surface waters concurrently experiencing such low hardness and pH.

The SMD 1 WWTP site does not have brook trout or striped bass and never has hardness as low as 10-11 mg/L (as $CaCO_3$). For waters not experiencing concurrent total hardness of 10-12 mg/L (as $CaCO_3$) and pH of 6.5-6.6, the U.S. EPA indicates that the 750 µg/L criterion (rounded to two significant figures from its originally derived 748 µg/L Final Chronic Value) is protective of aquatic life.

Application of U.S. EPA Criteria to SMD 1 WWTP Site

At the SMD 1 WWTP site, the lowest measured upstream receiving water hardness is 20 mg/L (as $CaCO_3$) and the lowest measured effluent hardness is 141 mg/L (as $CaCO_3$). Thus, downstream receiving water hardness would always be above 20 mg/L (as $CaCO_3$) and substantially greater than the 10-12 mg/L (as $CaCO_3$) hardness range where the 87 µg/L chronic criterion is applicable (see Figure 1 below). In fact, under conditions where the downstream flow in the receiving water is dominated by the discharge and, thus, downstream receiving water aluminum levels would be predominantly affected by the discharge, downstream total hardness would be on the order of 80 mg/L (as $CaCO_3$) or greater. On this basis, the Regional Water Board should be applying 750 µg/L as the chronic aquatic life criterion applicable to the receiving water at and downstream of the discharge location.

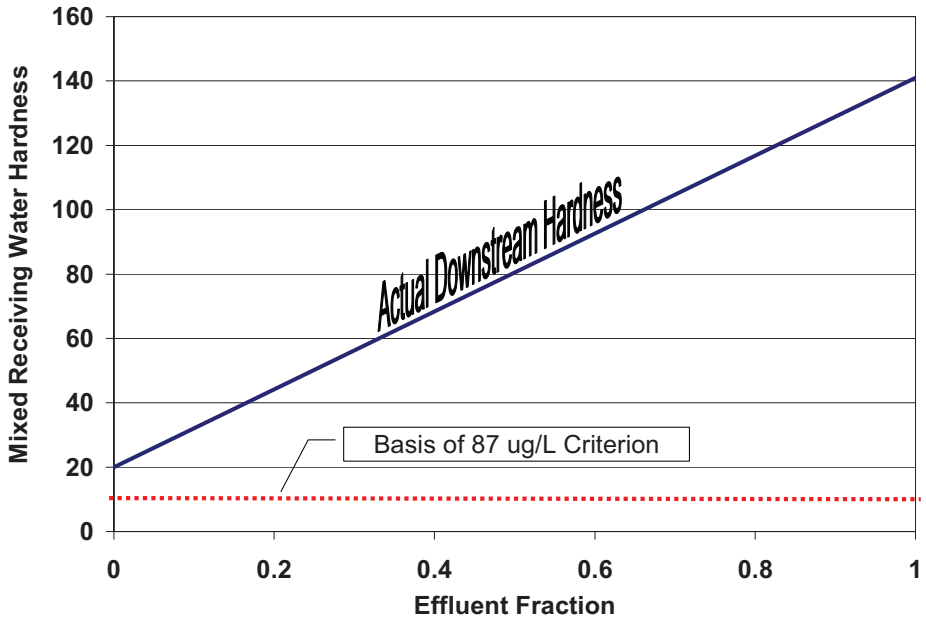

Figure 1. Range of mixed receiving water hardness for an effluent fraction ranging from 0 (100% Receiving Water) to 1 (100% effluent) at the SMD 1 WWTP site.

Such a conclusion has been repeatedly made by Mr. Charles Delos of U.S. EPA Headquarters in Washington, D.C. Mr. Delos is in the Office of Water, Criteria Division and provides technical assistance nationally on matters of proper application of adopted and U.S. EPA-recommended water quality criteria. Mr. Delos has clarified in letters to both Regional Water Board staff and the County's consultant at RBI, Dr. Bryan, that the hardness that needs to be considered when determining the appropriate chronic aluminum criterion is the downstream hardness and that, for

the SMD 1 WWTP site, 750 µg/L is the appropriate chronic criterion. In his letters specifically addressing the SMD 1 facility, Mr. Delos states:

- *"The hardness of SMD 1 effluent is high, and the upstream hardness of Rock Creek and Dry Creek is moderate. …Under the pH and hardness conditions described for the site, it appears that the criterion of 750 µg/l would be appropriate."* – Letter to Michael Bryan (RBI), November 1, 2002

- *"…it should not be expected that any environmental benefit would accrue from its* [87 µg/l] *application in this situation."* – Letter to Michael Bryan (RBI), November 1, 2002

- "*The key point is that the applicable hardness and pH are those that occur in the waters downstream of the effluent. The protectiveness and appropriateness of the criterion cannot be guaranteed unless the downstream water quality parameters are used*." – Letter to Richard McHenry (Regional Water Board) and Michael Bryan (RBI), December 19, 2003

- *"The hardness of the SMD No. 1 effluent is high, and the upstream hardness of Rock Creek and Dry Creek is generally moderate. With respect to the aluminum discharged in the effluent, the critical condition for protection of aquatic life is the low dilution condition. For SMD No. 1 a criterion of 750 µg/L is appropriate."* – Letter to Michael Bryan (RBI), June 10, 2010.

Copies of the above cited U.S. EPA letters are provided as Appendix 1 to these comments.

U.S. EPA Region 9 provided an opinion regarding the appropriate chronic criterion to apply stating, "*The existing EPA-recommended chronic aluminum criterion of 87 µg/L is clearly protective of aquatic life and is appropriate for use in evaluating reasonable potential and establishing effluent limitations."* (Letter to Pamela Creedon from Alexas Strauss, Director, Water Division, June 24, 2010) However, no basis for making this finding was provided other than saying *"EPA has not formally changed its recommended criteria."* The County is not disputing that the U.S. EPA has not changed its criteria. The County contends that the Regional Water Board is not applying the U.S. EPA's criteria correctly when using its best professional judgment, as evidenced by letters from U.S. EPA Headquarters' Charles Delos, who is a national expert and U.S. EPA's technical expert on such issues.

Lastly, the U.S. EPA Region 9 letter states, *"We understand that the reported lowest ambient hardness values (20 mg/l) may actually be a detection limit as that specific value was reported in six consecutive samples taken in 2007."* In an email to Ms. Diana Messina (Regional Water Board), copies of laboratory reports were provided for the hardness values in question. The County confirmed with David Block of Block Environmental Services that the 20 mg/L hardness values measured by Block Environmental were all detected and quantified values using a HACH kit titration method (based on Std Methods 2340C EDTA titration procedure) that has a lower quantitation level of 10 mg/L.

Future Effluent Hardness

The Fact Sheet (p. F-37) notes that the final effluent hardness is affected by the addition of magnesium hydroxide to the primary clarifier to provide alkalinity for nitrification. The Fact Sheet also notes that the use of magnesium hydroxide may be discontinued following the planned WWTP upgrade. The County has no plans to reduce or eliminate magnesium hydroxide use during the term of the renewed NPDES permit. This is because the new plant will not come on-line until near the end of the 5-year life of the permit, and neither the County nor its engineering consultant, Owen-PSOMAS, has any definitive plans at this time to discontinue the use of magnesium hydroxide when the new plant comes on-line. Due to the low alkalinity water used in the service area, chemical addition to provide additional alkalinity for the nitrification process will continue with the new WWTP. Thus, the County contends that the determination of the applicable chronic aluminum criterion should be based on the hardness of the current final effluent produced by the WWTP, as characterized in the data set submitted as part of the Report of Waste Discharge (i.e., lowest measured effluent hardness is 141 mg/L as $CaCO_3$), and not based on speculation that effluent hardness may be low enough in the future to make the 87 µg/L chronic criterion applicable. Doing so is consistent with the approach taken by permitting staff for all other metals addressed in this renewed permit, as well as for other permits adopted in the Central Valley Region.

Current Science for Aluminum Criteria Development

The Arid West Water Quality Research Program (AWWQRP) published a report in 2006 (funded by U.S. EPA Region 9), *Evaluation of the EPA Recalculation Procedure in the Arid West Technical Report*, that includes re-calculated (i.e., updated) aquatic life criteria for a number of constituents, including aluminum. The re-calculation of the aluminum criteria was done using U.S. EPA's criteria derivation methodology, but using additional data (from aquatic life studies with aluminum) that were not available when the original 1988 criteria were developed by EPA. In previously adopted NPDES permits (e.g., City of Modesto Water Quality Control Facility), the Regional Water Board has not considered these updated criteria acceptable, because the report and criteria have not been approved by U.S. EPA or undergone scientific peer review. The criteria were developed following the U.S. EPA's *Guidelines for Deriving Numerical Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985 Guidelines), the same methodology used for U.S. EPA's 1988 aluminum criteria.

The criteria update consisted of expanding the acute and chronic toxicity database according the 1985 Guidelines principles for identifying acceptable studies and data. The update resulted in the addition of 36 new acute data points and 11 new chronic data points (hardness from 0.6 to 50 mg/L $CaCO_3$) to the data set from which the criteria were developed.

The resulting criteria equations are expressed as a function of hardness, because hardness affects the toxicity of aluminum, as it does for many other trace metals. Insufficient data were available at the time EPA derived the 1988 recommended aluminum criteria to develop hardness-based criteria. Figure 2 (below) shows the acute and chronic aluminum criteria developed by the AWWQRP for a range of hardness values. The criteria have a "concave downward" shape when plotted. As has been previously demonstrated to the Regional Water Board for other metals criteria that are a function of hardness (e.g., CTR copper criteria), when the effluent is in

compliance with the criteria and the upstream receiving water is in compliance with the criteria, any mixture of the effluent and receiving water will always be in compliance with the criteria (the Tentative Order contains a full discussion of this beginning on p. F-24).

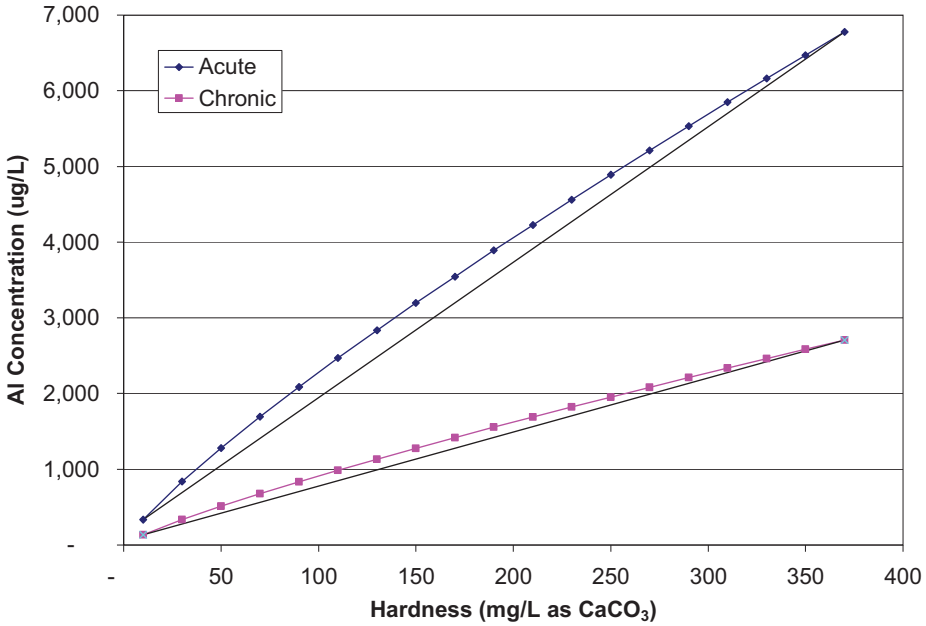

Figure 2. Arid West Water Quality Research Program-developed Aluminum Criteria for the Acute and Chronic Protection of Aquatic Life

Table 1 (below) summarizes the acute and chronic criteria for hardness ranging from 20 mg/L (as $CaCO_3$), the lowest measured upstream receiving water hardness, to 141 mg/L (as $CaCO_3$), the lowest measured effluent hardness. Even at a hardness of 20 mg/L (as $CaCO_3$), the updated chronic criterion is 239 µg/L, nearly three times higher than the 87 µg/L being applied by the Regional Water Board, further demonstrating the inappropriateness and over-stringency of applying 87 µg/L as a chronic aluminum criterion to the SMD 1 WWTP site.

Table 1. Updated and Revised Acute and Chronic Aluminum Criteria Values for Selected Hardness Values Using Equations Derived by the Arid West Water Quality Research Program.

Equations	Hardness (mg/L as $CaCO_3$)				
	20	30	40	50	141
Acute Al Criterion $e^{(0.8327\ [\ln(\text{hardness})]+3.8971)}$	597	837	1,063	1,280	3,213
Chronic Al Criterion $e^{(0.8327\ [\ln(\text{hardness})]+2.9800}$	239	334	425	512	1,284
Notes: All values are as µg total aluminum/L.					

Water-Effect Ratio Sample Result

In the U.S. EPA's summary of NAWQC (2009), the following footnotes are included for aluminum:

> *"There are three major reasons why the use of Water-Effect Ratios might be appropriate.*
>
> *The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH = 6.5–6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time."*
>
> *In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide.*
>
> *EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured."*

Because U.S. EPA allows for application of WERs to the aluminum criteria, the County conducted a sample WER test to further determine whether site-specific conditions are such that a chronic criterion higher than 87 µg/L would be more appropriate for NPDES permitting purposes. The result from the sample WER test was a WER of >13.7 (see Appendix 2 for WER test details). The "greater than" symbol is used, because no toxicity to *Ceriodaphnia dubia* (the most sensitive Genus tested by U.S. EPA) was observed in the SMD 1 WWTP effluent even at the highest aluminum spike concentration of 5,260 µg/L. Applying this sample WER of >13.7 to the 87 µg/L criterion results in a WER-adjusted chronic criterion of >1,192 µg/L.

This aluminum sample WER result is consistent with those determined for other Central Valley dischargers. An aluminum WER test recently completed by the City of Auburn, also using the test species *Ceriodaphnia dubia*, and having a hardness of 99 mg/L (as $CaCO_3$), determined a sample WER of >19.3. The City of Manteca's aluminum WER study determined a WER of 22.7 (Order No. R5-2009-0095). The Phase I WER study for City of Yuba City resulted in no observable effects below 8,000 µg/L (Order No. R5-2007-0134-01). As a result of the City of Yuba City's findings coupled with the City of Manteca's findings, the City of Yuba City NPDES permit states: *"Therefore, based on this new information provided in these reports, the results of Yuba City's Phase I WER Study estimating aluminum toxicity above 8,000 µg/L has been deemed sufficient to discount the use of the NAWQC chronic criterion of 87 µg/L."*

As with the Yuba City findings in Order No. R5-2007-0134-01, the sample WER result above is sufficient new information developed since adoption of the previous NPDES permit (and since the release of the previous Tentative Order) for the Regional Water Board to determine, using best professional judgment, that the 87 µg/L chronic criterion is not applicable to the SMD 1

WWTP site. Aluminum is not regulated like copper, or other metals with WER-based California Toxics Rule (CTR) criteria, where federal rules and State policy require that a complete discharger-specific WER be determined prior to implementation. Thus, it is appropriate for the Regional Water Board to consider results from the single sample events for permitting aluminum effluent limitations for SMD 1 WWTP, as the Board did previously for Yuba City.

Degradation and Anti-backsliding Concerns

U.S. EPA Region 9, in its June 24, 2010 letter to Pamela Creedon of the Regional Water Board, raises degradation and anti-backsliding concerns with applying a chronic aluminum criterion that is less stringent than that applied in the previous NPDES permit. The letter makes the following statements, which are addressed below.

- *EPA Region IX Statement 1: "However, a decision to apply a higher criterion and relax or eliminate the effluent limitations imposed by the previous permit would have to be supported by thorough anti-degradation and anti-backsliding analyses*."

- *EPA Region IX Statement 2: "A decision to eliminate or raise the aluminum effluent limitations above current performance levels would trigger serious anti-degradation and anti-backsliding concerns as that action would, in effect, authorize aluminum discharges above current discharge and ambient levels."*

With respect to triggering "anti-degradation" concerns, the elimination of the aluminum effluent limitations here will not further degrade high quality waters or impact applicable beneficial uses. As discussed previously, the 87 μg/L criterion is not necessary to protect the aquatic life beneficial uses of this receiving water. Where the receiving water does not concurrently have a total hardness of 10-12 mg/L (as $CaCO_3$) and a pH of 6.5-6.6, the 750 μg/L criterion is considered to be protective of aquatic life. SMD 1's discharge does not exceed the applicable criterion for the protection of aquatic life and will thus maintain and protect the aquatic life beneficial use.

Further, in the County's detailed anti-degradation analysis prepared in support of this permit renewal, aluminum was found to be a "Tier 1" receiving water, based on the 200 μg/L MUN criterion being the most stringent, applicable criterion. Tier 1 waters are those waters that do not currently meet such standards. The federal anti-degradation policy states that for Tier 1 waters, existing in-stream uses and the level of water quality necessary to protect such uses must be maintained and protected. (See 40 C.F.R. § 131.12(a)(1); see also Memorandum to Regional Board Executive Officers from William R. Attwater, Federal Antidegradation Policy (Oct. 7, 1987) at p. 11.) The state's anti-degradation policy does not apply because the receiving water is not a "high-quality" water with regards to aluminum. In this case, the amount of aluminum in the effluent does not exceed the most stringent criterion (i.e., 200 μg/L) and, therefore, the County's discharges will not impact the level of water quality necessary to maintain and protect the MUN beneficial uses. Moreover, the discharge would not significantly lower water quality with respect to aluminum relative to that which would occur under the current permit, and would not change the Tier 1 designation. Thus, the elimination of effluent limitations for aluminum will not violate either the state or federal anti-degradation policies.

In its second comment, U.S. EPA states that the elimination of or a change in aluminum effluent limitations above current performance levels would trigger serious anti-degradation and anti-backsliding concerns. This statement is not applicable in that it implies that effluent discharges from SMD 1 currently comply with the effluent limitations in the existing permit. That is certainly not the case. As the Regional Water Board is well aware, SMD 1 has not been able to consistently comply with the existing aluminum effluent limitations of 58 µg/L (30-day average) and 160 µg/l (daily average) that were based on the 87 µg/L since they were adopted in 2005. (See Figure 3, effluent data plotted against the existing effluent limitations.) Moreover, SMD 1 does not nor has it ever intended to arbitrarily increase the level of aluminum in its discharge if effluent limitations are removed or based on a different standard. The level of aluminum removal achieved by SMD 1's treatment processes will continue to be maintained. If monitoring data from the WWTP indicates that there is an increase of aluminum in the effluent that may trigger reasonable potential based on the 200 µg/L criterion for the drinking water use (MUN) or the 750 µg/L criterion for aquatic life beneficial uses, the Regional Water Board may reopen the permit and adopt new effluent limitations.

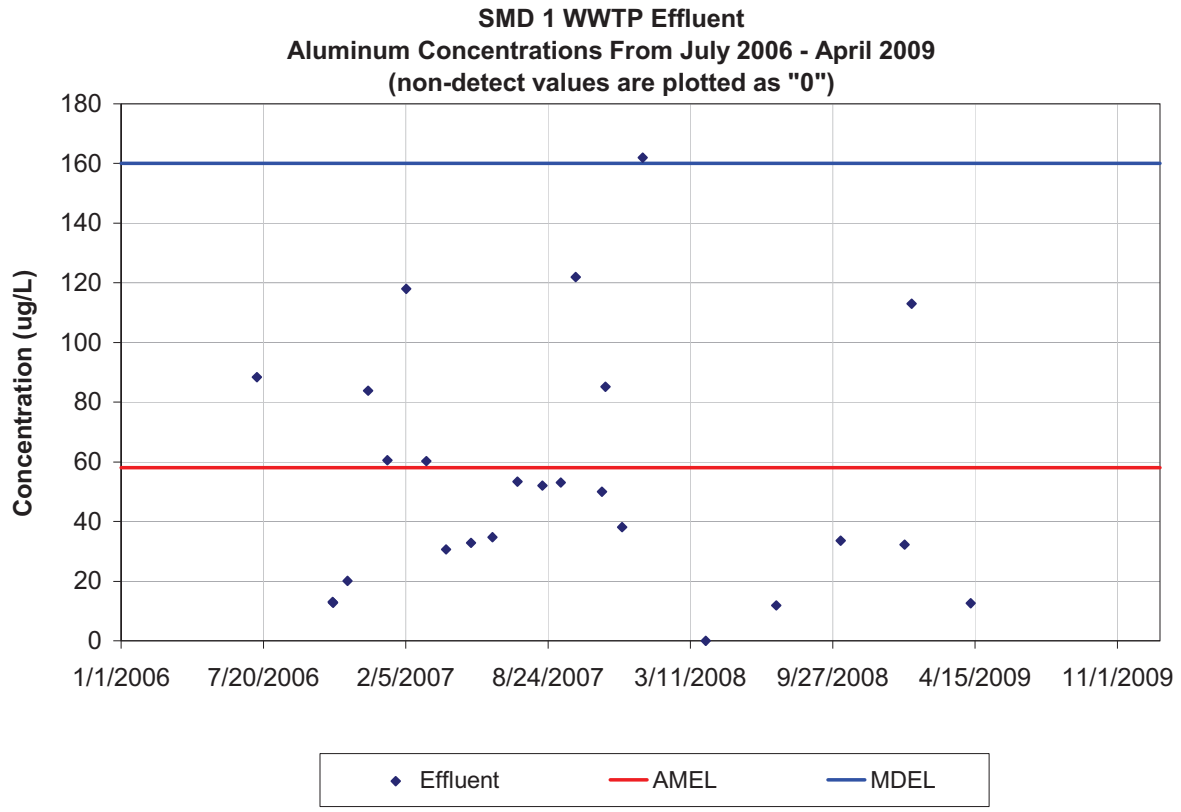

Figure 3. Concentrations of aluminum in the Sewer Maintenance District 1 Wastewater Treatment Plant effluent plotted with the average monthly effluent limitations (AMEL) and maximum daily effluent limitation (MDEL) in the current NPDES permit (Order No. R5-2005-0074).

With respect to anti-backsliding, removal of the aluminum effluent limitations based on the U.S. EPA ambient aluminum criterion of 87 µg/L for protection of aquatic life is not prohibited or prevented. Specifically, removal of the effluent limitations qualifies for an exception to the Clean Water Act's (CWA) general prohibition against backsliding.

The CWA provides for exceptions to anti-backsliding either under provisions in section 303(d)(4)(B), or section 402(o)(2). Under section 402(o)(2), there are several exceptions, including the availability of new information that was not available when the permit was issued and which would have justified the application of a less stringent effluent limitation. (33 U.S.C. § 1342(o)(2)(B)(i); 40 C.F.R. § 122.44(l)(2)(i)(B)(1).) In this case, new information exists that justifies the elimination of aluminum effluent limitations because the SMD 1 WWTP does not have reasonable potential to cause an exceedance in the receiving water of the applicable aquatic life aluminum criteria or the drinking water MCL. The new information includes new or more recent hardness data for both the effluent and the receiving water. The hardness data clearly shows that hardness in the receiving water is always substantially greater than the 10-12 mg/L (as $CaCO_3$), which is applicable to the 87 µg/L criterion. Further, and as indicated previously, the County has conducted a sample water-effects ratio (WER) test. With this test, no toxicity to *Ceriodaphnia dubia* was observed in the effluent even when the concentration of aluminum was spiked to 5,000 µg/L. Despite the 87 µg/L criterion not being applicable to the site conditions, when the sample WER is applied to the 87 µg/L criterion, the criterion is adjusted to >1,035 µg/L. The information from the sample WER provides new and additional information that further justifies the inapplicability of the un-adjusted 87 µg/L criterion to the receiving waters. Thus, the sample WER results and the new effluent and receiving water hardness data justify the elimination of the aluminum effluent limitations because this is new information that was not available when the previous permit was issued, and, had it been available, would have resulted in no reasonable potential for aluminum and thus no aluminum effluent limitations.

Conclusions

Use of the U.S. EPA un-adjusted aquatic life criterion of 87 µg/L for determining SMD 1 WWTP reasonable potential and deriving effluent limitations is inappropriate for the following reasons:

- The 87 µg/L criterion is applicable only under co-occurring low hardness (10-12 mg/L as $CaCO_3$) and pH (6.5-6.6) conditions that do not and would not exist at the SMD 1 WWTP site.

- Use of the un-adjusted 87 µg/L criterion contradicts the site-specific recommendation of the U.S. EPA Office of Water, Criteria Division technical expert Charles Delos.

- The sample WER test conducted on the SMD 1 WWTP effluent resulted in no toxicity at 5,000 µg/L total aluminum (the highest concentration tested) and resulted in a WER of >13.7, demonstrating that un-adjusted 87 µg/L is more restrictive than necessary to regulate aluminum at the SMD 1 WWTP site. A WER of >11.9 translates to a chronic criterion of >1,192 µg/L when applied to the 87 µg/L criterion. The WER results are similar to those obtained by the cites of Manteca, Yuba City, and Auburn. In NPDES permits for both the City of Manteca and the City of Yuba City, the un-adjusted 87 µg/L chronic criterion was found to be inappropriate for regulating aluminum in the discharges.

- The AWWQRP aluminum criteria recalculation results demonstrate that 87 µg/L is more restrictive than necessary for aquatic life protection, even at the lowest recorded receiving water hardness of 20 mg/L (as $CaCO_3$).

- The County has no plans to reduce or eliminate magnesium hydroxide use for alkalinity control during the NPDES permit term. Thus, the current effluent hardness is representative and may be used for determining the appropriate chronic aluminum criterion to apply to the SMD 1 WWTP site in the renewed permit.

- Elimination of the aluminum effluent limitations in the renewed NPDES permit is consistent with the State and federal antidegradation policies, and qualifies for an exception to the CWA's general prohibition against backsliding.

- The aluminum criteria/objectives applicable to the SMD 1 WWTP site, based on current information, are: 1) U.S. EPA aquatic life criteria of 750 µg/L (acute and chronic), or alternatively the AWWQRP's updated criteria adjusted for the lowest effluent hardness of 141 mg/L (as $CaCO_3$); and 2) DPH secondary MCL of 200 µg/L (as referenced in the Basin Plan).

County's Request

The maximum SMD 1 WWTP effluent concentration of aluminum is 162 µg/L. Concentrations of aluminum in the effluent do not exceed the applicable aquatic life criterion of 750 µg/L, the Arid West Water Quality Research Program-derived criteria for a hardness of 20 mg/L (as $CaCO_3$) or higher, or the drinking water MCL of 200 µg/L. The upstream water hardness ranged from 20 mg/L (not a method detection level) to 98 mg/L. As such, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the applicable criteria for protection of freshwater aquatic life or human health. **Thus, the County requests that "Alternative 3, Applicability of Aluminum Criteria" be adopted by the Regional Water Board with the following correction:**

- **Revise Section IV.C.1.b.ii, Line 7 to read: "The upstream water hardness ranged from 20 mg/L (not a method detection level) to 98 mg/L." County staff confirmed the hardness data of 20 mg/L were based on detected levels, not method detection limits.**

However, if the Regional Water Board proceeds to impose the effluent limitations for aluminum, the County requests that the CDO provide a time schedule for compliance with the maximum daily effluent limitation (MDEL), including protection from MMPs for exceeding the aluminum MDEL. The MDEL for aluminum of 151 µg/L in the Tentative Order is more stringent than the MDEL in the current NPDES permit of 160 µg/L. Compliance with the new, more stringent limitation is uncertain. The County requests the CDO be modified to provide a five year schedule for coming into compliance and specify that exceedance of the aluminum MDEL is exempt from MMPs, pursuant to Water Code Section 13385(j)(3).

II. Compliance Schedules for Total Coliform, BOD, TSS, and Title 22 or Equivalent Requirements

The Tentative Order appropriately includes in-permit compliance schedules for total coliform, BOD, TSS, and Title 22 or equivalent applicable when the influent flow is greater than 3.5 MGD and 7-day median temperature of the receiving water is less than 60°F. (Tentative Order at pp. 13-14, 32.) These compliance schedules are consistent with the Regional Water Board's current permitting practice and State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Resolution No. 2008-0025) (Compliance Schedule Policy). The Compliance Schedule Policy authorizes in-permit compliance schedules where a new interpretation of a water quality objective or criterion results in a numeric permit limitation more stringent than the limitation in the discharger's prior permit. (Compliance Schedule Policy at p. 3.)

In the County's case, the Regional Water Board derived new, more stringent numeric permit limitations for total coliform, BOD, TSS, and turbidity from the narrative toxicity objective.[1] (Tentative Order at p. F-47.) The current NPDES permit establishes effluent limitations or operational specifications for total coliform, turbidity, BOD, and TSS applicable when influent flow is less than 3.5 MGD based on the equivalent of tertiary treatment requirement. Per the California Department of Public Health's (DPH) recommendation, the current NPDES permit also establishes an effluent limitation for total coliform of 2.2 MPN/100 mL as a 30-day median applicable when the influent flow is greater than 3.5 MGD and 7-day median temperature of the receiving water is less than 60°F. This limitation is less stringent than the Tentative Order's final effluent limitation for total coliform. To accommodate the discharge of comingled tertiary/secondary wastewater, the current NPDES permit also contains effluent limitations or specifications for BOD, TSS and turbidity that are less stringent than the equivalent of tertiary treatment-based limitations for these parameters.

The Tentative Order requires the equivalent of tertiary treatment *regardless of influent flow rate*. The basis of this requirement is a finding that a more stringent treatment requirement is necessary to protect beneficial uses than previously imposed: "A discharge in accordance with the DPH recommendation may not protect contact recreation, food crop irrigation, and will not protect the beneficial uses of domestic and municipal supply during periods when the receiving water temperature is less than 60°F and treatment plant effluent flows exceed 3.5 MGD." (Tentative Order at p. F-50.) As a result of this finding, and because the parameters provide an indication of treatment performance, the Tentative Order includes more stringent water quality-based effluent limitations for total coliform, BOD and TSS and a more stringent operation specification for turbidity.

As explained in the Tentative Order's findings, the County submitted an Infeasibility Report and complied with the Compliance Schedule Policy application requirements. (Tentative Order at pp. F-72 to F-74.) The findings explain that a newly interpreted water objective resulted in new, more stringent permit limitations related to total coliform, BOD, TSS, and Title 22 or equivalent. (*Id.* at p. F-72.) The findings further explain that the County needs additional time to implement

[1] The WQBELs for BOD and TSS are more stringent than the technology-based requirements for secondary treatment mandated by the federal Clean Water Act.

actions to comply with the new limitations and that the compliance schedule is as short as possible. (*Id.* at pp. F-72 to F-73.)

Including the compliance schedules in the Tentative Order is also appropriate given that the parameters have not been included in a previous enforcement order. Current law allows a maximum of five years of protection from mandatory minimum penalties (MMPs) where a schedule of compliance is included in an enforcement order. Given the exposure to MMPs that will occur at the end of the term of the CDO, moving the compliance schedules now from the permit to the CDO will preclude the Regional Water Board's discretion to authorize any additional time for compliance for these parameters in the event regionalization proves viable. The County will have to direct its efforts and resources to constructing the additional tertiary facilities at the existing plant in order to ensure compliance within five years. If the schedules are included in the permit, the Regional Water Board retains full discretion to grant or deny additional time for compliance in order to implement a regional project. As detailed in the comments on the previous tentative order, the County has undertaken significant efforts towards regionalization at a total cost of more than $3.5 million.

For these reasons, the Regional Water Board should adopt the Tentative Order with the in-permit compliance schedules for total coliform, BOD, TSS, and Title 22 or equivalent, and reject "Alternative 1, Tentative Compliance Schedule for Tertiary Level Effluent Limitations in Proposed Ceased and Desist Order" and "Alternative 2, Tentative Compliance Schedule for Ammonia and Tertiary Level Effluent Limitations."

III. Compliance Schedule for Ammonia

The in-permit compliance schedule and interim effluent limitations for ammonia included in the Tentative Order are appropriate and should be adopted. (Tentative Order at pp. 13 and Attachments J, K and L.) The compliance schedule is consistent with the State Water Board's Compliance Schedule Policy, which authorizes in-permit compliance schedules where a new interpretation of a water quality objective or criterion results in a numeric permit limitation more stringent than the limitation in the discharger's prior permit. (Compliance Schedule Policy at p. 3.)

As explained in the Responses to Comments for the Regional Water Board's May 2010 meeting, the County's prior permit (Order No. R5-2005-0074) contained *floating* ammonia limitations applied directly as 1-hour average, 4-day-average and 30-day average effluent limitations that varied based on pH and temperature at the time of sampling. (Responses to Comments at p. 18.) In contrast, the Tentative Order contains new, more stringent *fixed* ammonia limitations based on water quality criteria conservatively determined using worst-case pH and temperature conditions observed over the term of the prior permit. (*Id.* at pp. 18-19; Tentative Order at p. F-38.) This is not a case where additional time is being sought for compliance; the County was consistently capable of complying with the floating limitations in the prior permit. (Responses to Comments at p. 19.) However, the monitoring data indicates that the County would be out of compliance with the fixed limitations a significant portion of the time and thus in immediate noncompliance upon the Tentative Order's adoption. (*Ibid*; Tentative Order at p. F-39.) In-permit compliance

schedules have been provided for other dischargers at the time floating effluent limitations were replaced with more stringent fixed limitations. (See, e.g., Waste Discharge Requirements for the City of Davis, Order R5-2007-0132-01 at p. F-47.)

The County's Infeasibility Report, report of waste discharge and anti-degradation analysis address the County's need to construct treatment plant upgrades to come into compliance with the new, more stringent effluent limitations for ammonia. (Responses to Comments at p. 19.) The Infeasibility Report requests a compliance schedule, providing the information required by the Compliance Schedule Policy. (*Id.* at pp. 19-21.) Regional Water Board staff concurred with the findings in the Infeasibility Report and determined an in-permit compliance schedule for ammonia to be appropriate.

Further, ammonia has not been included in a previous enforcement order against the County. As explained, current law provides no more than five years of protection from MMPs where a schedule of compliance is included in an enforcement order. Given the exposure to MMPs that will occur at the end of the term of the CDO, moving the compliance schedules now from the permit to the CDO will foreclose the Regional Water Board's discretion to authorize any additional time for compliance for ammonia if regionalization proves viable. If the schedule is included in the permit, the Regional Water Board retains full discretion to grant or deny additional time for compliance in order to implement a regional project.

For these reasons, the Regional Water Board should adopt the Tentative Order with the in-permit compliance schedule for ammonia and reject "Alternative 2, Tentative Compliance Schedule for Ammonia and Tertiary Level Effluent Limitations."

IV. New Arsenic Effluent Limitation

The Tentative Order identifies the lowest applicable water quality objective for arsenic as the primary maximum contaminant level (MCL) of 10 µg/L, implemented as an monthly average basis. The Tentative Order (p. F-40) cites the maximum effluent concentration at the SMD 1 WWTP for arsenic as 21.5 µg/L and uses this value for the reasonable potential analysis and determination that an arsenic effluent limitation is needed. The County disagrees with the 21.5 µg/L value being used for reasonable potential analysis determinations and with the implementation of the MCL as a monthly average.

Figure 1 below shows that, with the exception of this 21.5 µg/L value, measured arsenic concentrations in the effluent have never been above 0.825 µg/L (n = 20) over the period for which data are available (March 2002-February 2003 and October 2005 – January 2010). Thus, this 21.5 µg/L value is not representative of typical arsenic concentrations in the SMD 1 WWTP effluent. This is further evident when considering the maximum effluent concentration (MEC) of arsenic in effluents of other Central Valley region wastewater treatment plants. Table 2 summarizes the MECs reported in the most recently adopted NPDES permits for the identified facilities, which shows that typical MECs have been below the arsenic MCL of 10 µg/L, and in fact have been below 4 µg/L.

Table 2. Other Central Valley Region Discharger Arsenic Data

Discharger	Arsenic MEC (ug/L)
EID-Deer Creek	0.39
EID-El Dorado Hills	1.9
Roseville-Dry Creek	0.8
Roseville-Pleasant Grove	0.7
Vacaville-Easterly	3.8

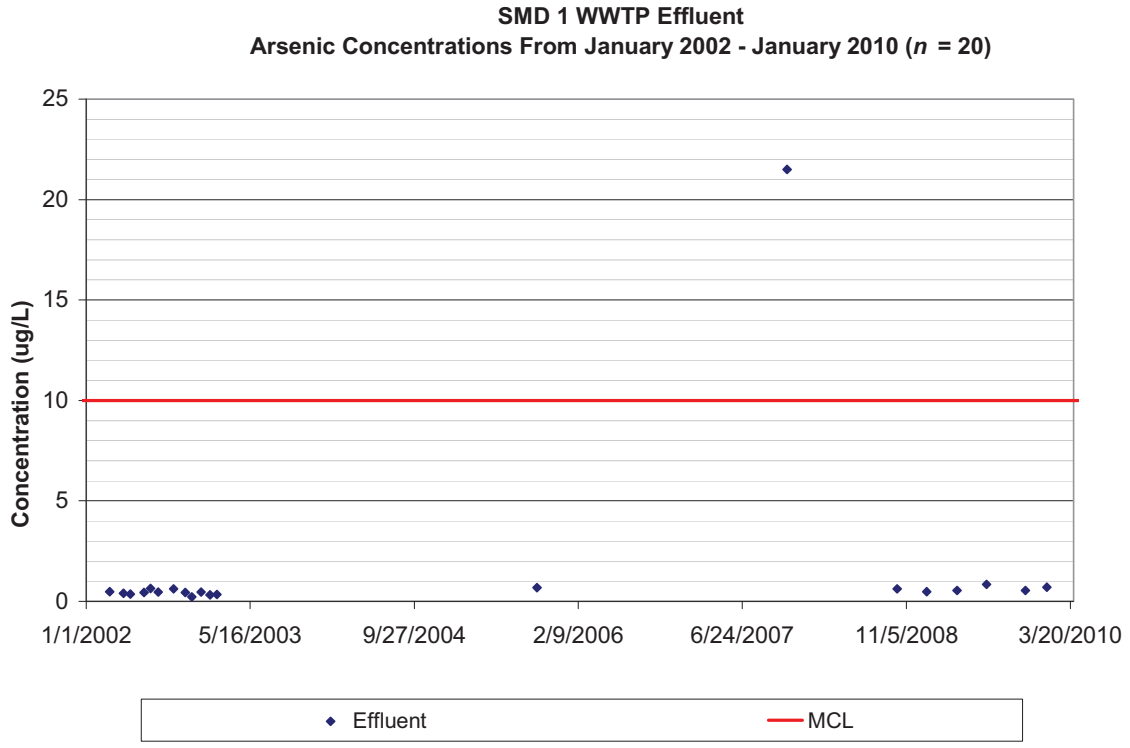

Figure 4. Sewer Maintenance District 1 Wastewater Treatment Plant effluent arsenic concentrations.

As part of conducting reasonable potential analyses, the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also referred to as the Statewide Implementation Plan or SIP) (Step #7 on p. 6) states the Regional Water Board may "*Review other information available to determine if a water quality-based effluent limitation is required, notwithstanding the above analysis in Steps 1 through 6, to protect beneficial uses. Information that may be used to aid in determining if a water quality-based effluent limitation is required includes: the facility type, the discharge type, solids loading analysis, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue residue data, water quality and beneficial uses of the receiving water, CWA 303(d) listing for the pollutant, the presence of endangered or threatened species or critical habitat, and other information.*" **The County believes the Regional Water Board can consider the above information as part of "other information" needed to properly determine whether effluent limitations for arsenic are needed in the Tentative Order and, based on this other**

information, can conclude that an arsenic effluent limitation is not needed because reasonable potential for arsenic does not exist. The County requests that the arsenic effluent limitation be removed.

Should the Regional Water Board continue to include an arsenic effluent limitation in the NPDES permit, the limitation should be implemented as an annual average. This is the approach the Regional Water Board has consistently taken for implementation of MCLs. The Regional Water Board's response to CSPA Comment No. 3 on the previous Tentative Order states:

> *"Central Valley Water Board staff does not concur that arsenic is improperly regulated as an annual average. The effluent limitation for arsenic is based on the Primary MCL which is designed to protect human health over long exposure periods. Primary MCLs are drinking water standards contained in Title 22 of the CCR. For the Primary MCL for arsenic, Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. Since water that meets these requirements on an annual average basis is suitable for drinking, it is impracticable to calculate average weekly and average monthly effluent limitations because such limits would be more stringent than necessary to protect the MUN use. Central Valley Water Board staff has determined that an averaging period similar to what is used by DPH for those parameters regulated by Primary MCLs is appropriate, and that using shorter averaging periods is impracticable because it sets more stringent limits than necessary."*

As described above, implementing the arsenic MCL of 10 µg/L would be "more stringent than necessary to protect the MUN use." **As such, the County requests the arsenic effluent limitation be changed to an annual average limitation, consistent with DPH implementation.**

APPENDIX 1

Letters from Charles Delos, U.S. EPA Office of Water, Criteria Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
WATER

11/01/2002 04:45 PM

To: Michael Bryan <bryan@robertson-bryan.com>

cc: Gary Wolinsky/R9/USEPA/US@EPA

Subject: Aluminum criterion

Michael Bryan:

I have looked over the material you sent me (attached below) on the flow and quality of the Placer County SMD No. 1 effluent, Rock Creek, and Dry Creek, and considered it with regard to safe concentrations of aluminum. As I have discussed by phone and as Gary Wolinsky has pointed out in his note, the 87 ug/L aluminum criterion is based on low pH and very low hardness conditions, similar to what might occur in acid rain affected Adirondack lakes. Under more ordinary pH and hardness conditions, a chronic criterion of 750 ug/L, such as applied by the States of Texas and Utah, is appropriate.

The hardness of the SMD No. 1 effluent is high, and the upstream hardness of Rock Creek and Dry Creek is moderate. The downstream hardness would be much too high for aluminum to elicit effects at concentrations near in magnitude to 87 ug/L. Under the pH and hardness conditions described for the site, it appears that a criterion of 750 ug/L, would be appropriate.

Whether applying the 87 ug/L criterion or the 750 ug/L criterion, aluminum bound to clay particles (aluminum silicate) would not be included in determining attainment of the criterion.

EPA would in no way object to the state applying a criterion of 87 ug/L, since such a criterion would undoubtedly be protective. However, it should not be expected that any environmental benefit would accrue from its application in this situation.

If you have further questions, do not hesitate to ask.

Charles Delos
Environmental Scientist
Health and Ecological Criteria Division
Office of Science and Technology, Office of Water

C. DeLos

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
WATER

December 19, 2003

Richard McHenry
Central Valley Regional Water Quality Control Board
McHenrR@rb5s.swrcb.ca.gov

Michael Bryan
Robertson-Bryan, Inc.
bryan@robertson-bryan.com

Dear Mr. McHenry and Mr. Bryan:

This is in follow-up to my letter of November 1, 2002. Both of you have requested clarification of the issues discussed therein.

As has been previously pointed out, EPA's 1988 chronic aluminum criterion, 87 µg/L, is based on two tests, one with brook trout and one with striped bass, at low hardness (10 - 12 mg/L) and low pH (6.5 - 6.6 SU). This value is considered to be necessary for protecting waters having such low hardness and pH. However, this value is expected to be overly protective when applied to waters of moderate hardness and pH. Many such waters are known to exceed this value while fully attaining the goals of the Clean Water Act.

Based on data for a diversity of species tested at hardness in the range of 45 - 220 mg/L and pH in the range of 6.5 - 8.3, the 1988 document notes that the chronic criterion would be determined to be 750 µg/L. Consequently, with EPA approval, some states apply this 750 µg/L value to waters of moderate (or higher) hardness and pH.

EPA has recently worked with the State of Utah to develop the following provision in their standards:

> The aluminum criteria are expressed as total recoverable metal in the water column. The 87 µg/L chronic criterion for aluminum is based on information showing chronic effects on brook trout and striped bass. The studies underlying the 87 µg/L chronic value, however, were conducted at low pH (6.5 - 6.6) and low hardness (< 10 ppm CaCO3), conditions uncommon in Utah's surface waters. A water effect ratio toxicity study in West Virginia indicated that aluminum is substantially less toxic at higher pH and hardness (although the relationship is not well quantified at this time). Further, EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg/L aluminum when either the total recoverable or dissolved aluminum is measured. Based on this

> information and considering the available toxicological information in Tables 1 and 2 of EPA's Aluminum Criteria Document (EPA 440/5-86-008), the Department of Environmental Quality will implement the 87 µg/L chronic criterion for aluminum as follows: where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaCO3 in the receiving water after mixing, the 87 µg/L chronic criterion will not apply, and aluminum will be regulated based on compliance with the 750 µg/L acute aluminum criterion. In situations where the 87 µg/L chronic criterion applies, a discharger may request development of a site-specific chronic criterion based on a water effect ratio. Or, a discharger may request development of a permitting procedure (a translator) that would take into account less toxic forms of particulate aluminum. In either case, the Department may require that the discharger requesting the change provide the technical information and data needed to support such a change.

I believe that such an approach may be helpful in resolving the water quality issues you are dealing with. Depending on hardness and pH, either the criterion 750 µg/L is applied, or a criterion of 87 µg/L with or without a Water-Effect Ratio (WER) modification is applied.

Experience indicates that WER studies are appropriate for aluminum, using *Ceriodaphnia* as the test species. Under conditions of low pH and temperature, *Ceriodaphnia* is as sensitive as brook trout or striped bass.

Although EPA endorses the Utah approach, we recognize that such an approach does not resolve all aluminum issues. In particular, in some streams, nontoxic clay particles (aluminum silicate), measured by the total recoverable procedure, are high enough to exceed the 750 µg/L criterion. Although measured by the total recoverable procedure, the criterion is not intended to apply to aluminum silicate particles, as noted in the 1988 document.

The EPA criteria program recognizes that a more thoroughgoing solution is needed for resolving the problems with the 1988 criterion. Nevertheless, resources have not been allocated to such an undertaking. There are two reasons for this. First, aluminum is not a priority pollutant. Most states do not have an aluminum criterion. Nor has EPA ever promulgated a criterion for aluminum in any rule. Second, aluminum chemistry is extremely complex. Attempting development of a biotic ligand model for aluminum would require more resources than for copper or silver, already daunting jobs in themselves.

From phone conversations with both of you it is apparent that there is question about the actual hardness and pH of the river to which the criterion is being applied. I cannot become further involved with such data for the site. But I will set forth the appropriate procedure for setting the hardness and pH applicable to the criterion.

The key point is that the applicable hardness and pH are those that occur in the waters downstream of the effluent. The protectiveness and appropriateness of the criterion cannot be guaranteed unless the downstream water quality parameters are used.

If using data on upstream and effluent hardness, then use the dilution formula to determine the downstream hardness concentration C_D:

$$C_D = \frac{C_E Q_E + C_U Q_U}{Q_E + Q_U}$$

where C_E and C_U are the effluent and upstream concentrations, and Q_E and Q_U the effluent and upstream flows.

Determination of downstream pH from upstream and effluent pH is more convoluted and requires data on alkalinity. EPA's 1988 document Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling sets forth the procedure, which is based on carbonate equilibrium. The subscripts U and E refer to the upstream and effluent:

1. Calculate the carbonate equilibrium constants, pK:

$$pK_U = 6.57 - 0.018\,T_U + 0.00012\,T_U^2$$
$$pK_E = 6.57 - 0.018\,T_E + 0.00012\,T_E^2$$

where T is temperature.

2. Calculate the corresponding ionization fractions, F:

$$F_U = \frac{1}{1 + 10^{pK_U - pH_U}} \qquad F_E = \frac{1}{1 + 10^{pK_E - pH_E}}$$

3. Calculate the total inorganic carbon concentrations, TIC:

$$TIC_U = \frac{Alk_U}{F_U} \qquad TIC_E = \frac{Alk_E}{F_E}$$

where Alk is alkalinity.

4. Calculate the downstream T_D, Alk_D, and TIC_D, using the standard dilution formula shown for hardness at the top of the page.

5. Calculate the downstream ionization constant.

$$pK_D = 6.57 - 0.018\,T_D + 0.00012\,T_D^2$$

6. Finally, calculate the downstream pH:

$$pH_D = pK_D - \log_{10}\left(\frac{TIC_D}{Alk_D} - 1\right)$$

State implementation procedures vary considerably with respect to the frequency corresponding to a design parameter such as hardness or pH. For the National Toxics Rule, EPA only indicated that the design hardness selected by the state should be consistent with what occurs during the low flow design event.

I hope this is helpful for resolving your issues.

Sincerely,

C Delos

Validity unknown

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Date: 2003.12.19 10:35:29 -05'00'

Charles Delos
Environmental Scientist

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
WATER

June 10, 2010

Michael Bryan, Ph.D.
Robertson-Bryan, Inc.
9888 Kent Street
Elk Grove, CA 95624

Dear Dr. Bryan:

I have looked over the material you sent me on the hardness of the Placer County SMD No. 1 effluent, Rock Creek, and Dry Creek (SMD1 Hardness Data-6-9-2010 update.xls). I considered it with regard to setting limitations on the effluent aluminum. As I have discussed in a 2002 letter to you, the 87 µg/L aluminum criterion is based on low pH and very low hardness conditions. Under more ordinary pH and hardness conditions, a chronic criterion of 750 µg/L, such as applied by the States of Texas and Utah, is appropriate and protective of aquatic life.

The hardness of the SMD No. 1 effluent is high, and the upstream hardness of Rock Creek and Dry Creek is generally moderate. With respect to the aluminum discharged in the effluent, the critical condition for protection of aquatic life is the low dilution condition. For SMD No. 1 a criterion of 750 µg/L is appropriate. Because the effluent aluminum would be diluted simultaneously with any dilution of effluent hardness, there is no basis for anticipating that the effluent aluminum would pose a toxicity problem during periods of higher dilution flow, when it allows attainment of the 750 µg/L criterion in low-dilution situations.

If you have further questions, do not hesitate to ask.

Sincerely,

Charles Delos

Charles Delos
Environmental Scientist
Health and Ecological Criteria Division
Office of Science and Technology, Office of Water

APPENDIX 2

Sample Aluminum Water-effect Ratio Test Technical Memorandum and Bioassay Report

ROBERTSON - BRYAN, INC.
Solutions for Progress

9888 Kent Street • Elk Grove CA 95624
Phone (916) 714-1801 • Fax (916) 714-1804

TECHNICAL MEMORANDUM

Date: August 5, 2010

To: David Atkinson and Kevin Bell, County of Placer Sewer Maintenance District 1

From: Michelle Brown, P.E., and Michael Bryan, Ph.D.

Project: 2010 NPDES Permit Renewal (Placer County 106)

Re: Aluminum Sample Water-Effect Ratio Result

Introduction

Robertson-Bryan, Inc. (RBI) and its subconsultant, Pacific Ecorisk have completed one aluminum water-effect ratio (WER) sample and testing event in support of developing appropriate effluent limitations for aluminum in the renewed NPDES permit for the County of Placer's Sewer Maintenance District 1 (SMD 1) Wastewater Treatment Plant (WWTP). The NPDES permit is being renewed by the Central Valley Regional Water Quality Control Board (Regional Water Board). This technical memorandum summarizes the test methods and results for the July 20, 2010 sample event.

Methods

The aluminum WER testing was conducted consistent with the U.S. Environmental Protection Agency's (EPA) *Interim Guidance on Determination and Use of Water-Effect Ratios for Metals*, U.S. EPA, February 1994 (1994 Interim Guidance). The following sections describe the site water collection and testing methods. Additional details regarding sample handling and testing are provided in the appended report prepared by the bioassay testing laboratory, Pacific Ecorisk.

Site Water

The 1994 Interim Guidance recommends a minimum of three sampling events, two at the permitted design flow and one at a higher flow, for determining a final WER. The Regional Water Board is providing zero dilution in the calculation of aluminum effluent limitations in the renewed NPDES permit. Thus, the site water for this WER sample event consisted of undiluted effluent. This is consistent with the 1994 Interim Guidance (p. 18) which states: "a WER should be determined using the water to which the site-specific criterion is to apply." The undiluted effluent sample was collected using an automated sampler to collect a 24-hour composite. Sample collection began on July 19, 2010 and concluded on July 20, 2010.

Testing

The design low-flow condition for both acute and chronic criteria is the same (i.e., no receiving water flow), and the aluminum acute criterion (criterion maximum concentration or CMC) is larger than the chronic criterion (criterion continuous concentration or CCC). Thus, it is environmentally conservative for the WER to be

determined using acute conditions (i.e., from an EC50 for a cmcWER) and for the cmcWER to be used to adjust both the CMC and the CCC (1994 Interim Guidance, p. 26 and 27). The 1994 Interim Guidance suggests, and the *Streamlined Water-Effect Ratio Procedure for Discharges of Copper* (2001 Streamline Procedure) (EPA-822-R-01-005, March 2001) confirms, that this approach is environmentally conservative, and is common practice for deriving WERs. Although the chronic criterion is less than the acute criterion, this does not mean the chronic WER is less than the acute WER; rather, the opposite has repeatedly been found to be the case. The involvement of strong binding agents for metals causes the water effect "difference" (i.e., the site water EC50 minus laboratory water EC50) to be similar across various effect concentrations (i.e., toxicity test sensitivities). As a result, the WER (site water EC50 divided by laboratory water EC50) tends to increase as the effect concentrations decrease (i.e., the more sensitive the test, the larger the WER). Hence, the WER determined from acute EC50 testing is expected to be conservative for, and thus protective of, chronic effects.

Results

The effluent sample that was collected July 19-20, 2010 is representative of typical effluent produced by the SMD 1 WWTP, as demonstrated by the BOD, TSS, turbidity, pH, and EC levels measured those days (Kevin Bell, pers. comm.., July 26, 2010). Additional water quality characteristics demonstrating test acceptability (e.g., total organic carbon, hardness) are provided in the appended Pacific Ecorisk report.

The EC50s for the effluent and laboratory water are presented in Table 1. The WWTP effluent EC50 is shown with a "greater than" symbol, because even at the highest spiked aluminum concentration of 5,260 µg/L, 100 percent *Ceriodaphnia dubia* survival occurred.

Table 1. Total Recoverable Aluminum EC50 Determinations and Water-Effect Ratio for the July 19-20, 2010 Sample Event

Test Water	Total Aluminum EC50 (µg/L)
Sewer Maintenance District 1 Wastewater Treatment Plant Effluent	>5,260
Laboratory Water	384

The aluminum sample WER is calculated as follows:

Sample aluminum WER = >5,260 ÷ 384

Sample aluminum WER = >13.7

WERs are applied as direct multipliers to the U.S. EPA's aquatic life criteria for aluminum. Thus, the chronic aluminum criteria adjusted for the sample WER is calculated as follows:

Sample WER-adjusted aluminum criterion (chronic) = >13.7 x unadjusted chronic criteria

Sample WER-adjusted aluminum criterion (chronic) = >1,192 µg/L

APPENDIX A

PACIFIC ECORISK REPORT

Jeff Lafer
Robertson-Bryan, Inc.
9888 Kent Street
Elk Grove, CA 95624

August 3, 2010

Dear Mr. Lafer:

Please find enclosed 2 copies (1 bound, 1 unbound) of the final report "Performance of *Ceriodaphnia dubia* Toxicity Testing in Support of Development of an Aluminum Water Effect Ratio (WER) for Application to the Placer County Sewer Maintenance District 1" for an effluent sample collected on July 20, 2010.

Please feel free to contact me, or my colleague Alison Briden, at (707) 207-7760 if you have any questions.

Regards,

Jeffrey Cotsifas

Digitally signed by Jeffrey Cotsifas
DN: cn=Jeffrey Cotsifas, o=Pacific EcoRisk, ou, email=cotsifas@PacificEcoRisk.com, c=US
Date: 2010.08.04 12:49:11 -07'00'

Jeff Cotsifas
Principal & Special Projects Director

This testing was performed under Lab Order 17155. The test results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report, and only relate to the sample(s) tested. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk.

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Final Report

Performance of *Ceriodaphnia dubia* Toxicity Testing in Support of Development of an Aluminum Water Effect Ratio (WER) for Application to the Placer County Sewer Maintenance District 1

Effluent Sample Collected July 20, 2010

Prepared for

Robertson-Bryan, Inc.
9888 Kent Street
Elk Grove, CA 95624

Prepared by

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534

August 2010

PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING

Performance of *Ceriodaphnia dubia* Toxicity Testing in Support of Development of an Aluminum Water Effect Ratio (WER) for Application to the Placer County Sewer Maintenance District 1

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Appendices

1. INTRODUCTION

As part of an investigation to determine the discharger-specific aluminum Water Effect Ratio (WER) applicable to the Placer County Sewer Maintenance District 1 (SMD 1) Wastewater Treatment Plant (WWTP) discharge for NPDES permitting, Robertson-Bryan, Inc. (RBI) contracted Pacific EcoRisk (PER) to conduct WER testing. Specifically, PER was responsible for:

- preparation of aluminum toxicity test solutions;
- collection and shipping of test solution water samples to the contract analytical lab(s);
- performance of acute toxicity tests with *Ceriodaphnia dubia* to determine the toxicity of aluminum in the SMD 1 WWTP effluent and in "Lab" water; and
- analysis of the toxicity and analytical chemistry data to determine benchmark toxicity values (e.g., EC_{50} point estimates).

In order to assess the sensitivity of the *C. dubia* test organisms to toxic stress, a reference toxicant test was also performed. This report describes and summarizes the performance and results of aquatic toxicity testing performed in support of determining the discharger-specific WER applicable to the SMD 1 WWTP discharge for NPDES permitting.

2. METHODS

The methods used in conducting these evaluations followed established guidelines for development of a WER:

- Interim Guidance on the Determination and Use of Water Effect Ratios for Metals. EPA/823/B-94/001. Office of Science and Technology, US Environmental Protection Agency, Washington, DC 20460; and,
- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. EPA/821/R-02/012. Environmental Research Laboratory, US Environmental Protection Agency, Duluth, MN.

2.1 Collection and Handling of the Ambient Water Sample

On July 20, 2010, RBI staff collected a sample of the SMD 1 WWTP effluent (designated "Effluent"). This sample was placed into an insulated cooler and delivered the same day, on ice and under chain-of-custody, to the PER testing laboratory in Fairfield, CA. Upon receipt at the testing laboratory, aliquots of the sample were collected for analyses of initial water quality characteristics (Table 1), with the remainder of the sample being stored at <6˚C. The chain-of-custody record for the collection and delivery of this sample is provided as Appendix A.

2.1.1 "Lab" Water

As per client instruction, a "Lab" water for this testing was prepared to have a hardness of 10 mg/L and a pH of 6.5; while this deviates from the 1994 EPA guidance for a hardness between 40-220 mg/L and a neutral pH, the lower hardness and pH is appropriate as the water quality criterion for which this WER is being applied is based on testing performed at this lower hardness and pH.

On July 20, 2010, PER staff prepared a batch of "Lab" water (US EPA synthetic water [as per EPA 2002]) at a nominal hardness level of 10 mg/L as $CaCO_3$. An aliquot of the "Lab" water was then adjusted to pH 6.5 via addition of HCl or NaOH; 120 mL aliquots of the pH-adjusted "Lab" water were poured into replicate 200 mL test chambers which were placed into sealed (air-tight) chambers with air concentrations of 0.1, 0.2, 0.3, 0.5, 0.7 and 1% CO_2 (achieved via addition of lab-grade CO_2 to the enclosed air) for determination of the appropriate CO_2 concentration to maintain the "Lab" water at pH 6.5; the results of this testing indicated that 0.1% CO_2 headspace would maintain the "Lab" water pH at pH 6.5. Initial water quality characteristics for the "Lab" water are presented in Table 1.

Table 1. Initial water quality characteristics for the SMD 1 WWTP effluent and "Lab" Water samples.

Test Waters	Temp. (˚C)	pH	D.O. (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity (μS/cm)	Total Ammonia (mg/L N)
SMD 1 WWTP effluent	7.7[a]	7.23	8.1	81	150	597	2.04
"Lab" Water (at 10 mg/L Hardness)	–[b]	7.35	8.2	8	9.9	26	<1.0

a - Sample was shipped the same day as collected in a cooler at <6˚C.
b - The "Lab" water was prepared at room temperature.

2.2 Definitive Toxicity Test Procedures

2.2.1 Preparation of Test Solutions

Nominal definitive test aluminum concentrations (Table 2) were selected so as to bracket the expected potential range of EC_{50} values for *C. dubia* survival. Test solutions at these concentrations were prepared by spiking 1000-mL aliquots of the SMD 1 WWTP effluent or "Lab" water with aluminum (as $Al(SO_4)_3 \bullet 18H_2O$), from a commercial supplier [Mallinckrodt Baker, Phillipsburg, NJ]). Test solutions were allowed to sit undisturbed for at least 3 hrs prior to test initiation to allow for aluminum partitioning to reach an equilibrium with the test water matrices.

Table 2. Definitive test nominal total aluminum additions to SMD 1 WWTP effluent and "Lab" water.	
Site	Nominal Test Concentrations (μg/L Total Al)
SMD 1 WWTP effluent	0, 288, 412, 588, 840, 1201, 1715, 2450, 3500, and 5000
"Lab" Water at 10 mg/L Hardness	0, 82, 118, 168, 240, 343, 490, 700, and 1000

2.2.2 Collection of Water Samples for Chemical Analyses

Samples of each test solution were collected for aluminum analysis immediately prior (within 1 hour) to test initiation and again at test termination. Using "clean" techniques, these samples were collected into pre-cleaned 250-mL HDPE bottles (supplied by the analytical lab), which were sealed and placed within an insulated cooler and transported to Caltest Environmental Laboratory (Caltest); water samples were also collected at test initiation and sent to Caltest for analyses of total suspended solids (TSS), total organic carbon (TOC), dissolved organic carbon (DOC) and hardness. The Caltest reports containing the final analytical chemistry results for these analyses are presented in Appendix F.

2.2.3 Acute Toxicity Testing with *Ceriodaphnia dubia*

Test solutions were prepared as described in Section 2.2.1. "New" water quality characteristics (pH, D.O., and conductivity) were measured for each test solution immediately prior to use in these tests.

There were 5 replicates for each test treatment (4 replicates for generation of test survival data and an additional replicate for measurement of water quality), each replicate consisting of 120 mL of test solution in a 200-mL HDPE beaker. The tests were initiated by allocating 5 neonate (<24 hrs old) *C. dubia*, from in-house laboratory cultures, into each replicate cup. Immediately upon allocation of the test organisms into each of the replicate beakers, the "Lab" water test beakers were transferred to CO_2 headspace chambers, the chambers were sealed and the headspace gas was adjusted to 0.1% CO_2 (via addition of lab-grade CO_2 to the enclosed air) so as to maintain test pH at 6.5. The replicate beakers and sealed "Lab" water containers were placed in a temperature-controlled room at 20˚C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

After 24 hrs exposure, each replicate was examined and the number of live organisms was determined, with any dead animals being removed. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the old test water from the water quality replicate at each treatment. The test beakers were then placed back into the water bath. For the "Lab" water test, the test replicates were placed back into the CO_2 headspace chamber, the chambers were sealed and the headspace gas was adjusted to 0.1% CO_2 (via addition of lab-grade CO_2 to the enclosed air) so as to maintain test pH at 6.5.

After 48 (± 1) hrs, the tests were terminated and the number of live neonates in each replicate cup was determined. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the old test water collected from the water quality replicate at each treatment.

2.3 Selection of Toxicity Test Solutions for Aluminum Analysis

Guidance found in the EPA Memorandum Interim Guidance on the Determination and Use of Water Effect Ratios for Metals (EPA/823/B-94/001) indicates that for quantal data, analysis of only those data that are needed to calculate the key endpoints of the toxicity tests is appropriate, rather than analyzing all of the test solutions. The following criteria were followed to identify the minimum test treatments for which test solutions should be analyzed for total and dissolved aluminum:

- the Controls (i.e., the "0 µg/L" test treatments),
- the highest concentration that did not adversely affect the test organisms,
- all "partial response" test treatments (i.e., concentrations in which some, but not all, of the test organisms were adversely affected),
- the lowest concentration that adversely affected all of the test organisms.

It should be noted that there were no significant mortalities in the effluent test at any of the aluminum concentrations tested. As a result and at the request of the client, only the Control and highest test concentration for the effluent test were analyzed for total aluminum; all test treatments for the "Lab" water were analyzed for total aluminum.

2.4 Determination of "Definitive" Toxicity Point Estimates

For the definitive test treatments selected by RBI, Caltest quantified total aluminum concentrations from select test solution samples at test initiation and test termination. It should be noted that the reported concentrations of aluminum in the Lab Water samples collected at test termination were depressed relative to the concentrations measured at test initiation. Aluminum has a very complex chemistry and quickly forms hydroxides when added to water, resulting in the formation of a white precipitate. It is believed that the presence of this precipitate resulted in the depressed aluminum concentrations in the sample bottles of test solutions that were collected at test termination. As a result, only the measured total aluminum values at test initiation were used to develop definitive toxicity test point estimates. This approach is both conservative and consistent with the EPA methods (1994) for the development of a WER. Determinations of key EC point estimates were made using the CETIS® statistical software.

2.5 Reference Toxicant Testing of the *Ceriodaphnia dubia*

In order to assess the sensitivity of the test organisms to toxic stress, a reference toxicant test was performed on the laboratory culture of *C. dubia*. The Lab Control water for this test consisted of a mixture of Type 1 lab water (reverse-osmosis, de-ionized water) and a commercial spring

water (Perrier®). Test solutions for this test consisted of Lab Control water spiked with NaCl at test concentrations of 500, 1000, 2000, 3000, and 4000 mg/L NaCl.

There were 4 replicates for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. This test was initiated by allocating 5 neonate (<24 hrs old) *C. dubia*, from in-house laboratory cultures, into each replicate cup. The replicate cups were placed in a temperature-controlled room at 20˚C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Routine water quality characteristics (pH and D.O.) of the test waters were measured each day and at the end of the test. After 48 (± 1) hrs, the test was terminated and the number of live neonates in each replicate cup was determined.

The resulting survival data were analyzed to determine key dose-response point estimates (e.g., EC_{50}); all statistical analyses were performed using the CETIS® software. These response endpoints were then compared to the 'typical response' range established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

3. RESULTS

The results of the definitive aluminum toxicity tests are presented in Appendix B. The results of statistical analyses of the definitive toxicity tests using "nominal" test aluminum concentrations for the SMD 1 WWTP effluent and "Lab" water tests are presented in Appendix C; the results of statistical analyses performed using the measured total aluminum concentrations are presented in Appendix D. Test data and summary statistics for the NaCl reference toxicant test are presented in Appendix E. A summary of the QA/QC review of the toxicity testing data is presented in Section 4.

A summary of the test results of the acute *C. dubia* toxicity tests of aluminum-spiked SMD 1 WWTP effluent and "Lab" water are presented below in Table 3. The total aluminum EC50 values (and accompanying 95% confidence levels) were calculated using the linear regression statistical method, based the measured total aluminum concentrations at test initiation. These EC50 data can be used to calculate a WER using the EPA's procedures (EPA 1994).

Table 3. Total aluminum EC_{50} determinations for SMD 1 WWTP effluent and "Lab" water based on measured total Al concentrations at test initiation.

Test Waters	Total Aluminum EC_{50} (μg/L) (95% confidence limits)
SMD 1 WWTP Effluent	>5260
"Lab" Water at 10 mg/L Hardness	384 (224-626)

4. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The toxicity testing of the SMD 1 WWTP effluent and "Lab" Water with *C. dubia* incorporated standard QA/QC procedures to ensure that the test results were valid, including the use of negative controls, positive controls, test replicates, and measurement of water quality during testing. These QA/QC procedures are consistent with methods described in the US EPA guidelines (EPA-821-R-02-012 [Section 4.0]).

The Lab Water TSS and TOC were both <5 mg/L, meeting the requirement for use of a "Lab" water in WER determinations.

The effluent sample was shipped on ice, stored at <6˚C, and was used within the 96-hr holding time period.

All measurements of routine water quality characteristics were performed as described in the PER Standard Operating Procedures (SOPs). All biological testing water quality conditions were within the appropriate limits.

Negative Control (Laboratory Culture Water) - The biological response in the negative Control treatment was within test acceptability limits of ≥90% survival.

Positive Control - The accuracy of the responses of the test organisms to toxic stress was evaluated using positive controls (reference toxicant testing). The current reference toxicant EC50 was within the "typical response" range established by the 20 most recent previously-performed reference toxicant tests, indicating that these test organisms were responding to toxic stress in a typical fashion. A summary of reference toxicant database values for *C. dubia* acute toxicity is presented in Table 4. Test data and summary statistics for the NaCl reference toxicant test are presented in Appendix E.

Table 4. Summary of reference toxicant database for *Ceriodaphnia dubia*.

Current EC_{50} Value	Reference Toxicant Database "Typical Response" Range
2880 mg/L NaCl	1264-3334 mg/L NaCl

5. REFERENCES

US EPA (2002) Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA/821/R-02/012. US EPA, Environmental Research Laboratory, Duluth, MN.

US EPA (1994) Interim Guidance on the Determination and Use of Water Effect Ratios for Metals. EPA/823/B-94/001. Office of Science and Technology, US Environmental Protection Agency, Washington, DC 20460.

US EPA (2001) Streamlined Water Effect Ratio Procedure for Discharges of Aluminum. EPA/822/R-01/005. Office of Water. US Environmental Protection Agency, Washington, DC 20460.

Appendix A

Chain-of-Custody Record for the Collection and Delivery of the SMD 1 WWTP Effluent Sample

CHAIN OF CUSTODY RECORD

PACIFIC ECORISK
2250 Cordelia Rd
Fairfield, CA 94534
Ph: (707) 207-7760
Fax: (707) 207-7916
www.pacificecorisk.com

RESULTS TO:
Robertson-Bryan Inc.
9888 Kent St
Elk Grove, CA 95624
Attn: Jeff Lafer
Phone: (916) 405-8913
Email: jeffl@robertson-bryan.com

BILL TO:
Attn:
Phone:
Email:

PROJECT: Placer Canty SMD1 AL WER

ANALYSES REQUESTED

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE MATRIX	GRAB/ COMP.	# CONTAINERS/TYPE	Acute Ceri								REMARKS
Effluent	7/20/10	6:50	WW	Comp-	1 / 5gl.	X								
					/									
					/									
					/									
					/									
					/									
					/									
					/									

METHOD OF SHIPMENT: FedEx:_____ UPS:_____ HAND: X OTHER:_____

COMMENTS:

CODES:

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	PAGE #
David Thomas	7/20/10	8:35		7/20/10	0835	OF

WHITE - RETURN W/ SAMPLE YELLOW - KEEP FOR YOUR RECORDS

Appendix B

Summary Results Tables for *Ceriodaphnia dubia* Acute Aluminum Toxicity Tests Performed on SMD 1 WWTP Effluent and "Lab" Water

Table B-1. Summary of results for total aluminum in the SMD 1 WWTP effluent.

Nominal Spike (μg/L Al)	Measured Al Concentration at Test Initiation (μg/L)	% Survival				
		Rep A	Rep B	Rep C	Rep D	**Mean**
0[A]	40	100	100	100	100	**100**
288	nm	100	100	100	100	**100**
412	nm	100	100	100	100	**100**
588	nm	100	100	100	100	**100**
840	nm	100	100	100	100	**100**
1201	nm	100	100	100	100	**100**
1715	nm	100	100	100	100	**100**
2450	nm	100	100	100	100	**100**
3500	nm	100	100	100	100	**100**
5000[A]	5260	100	100	100	100	**100**

Critical Values	Nominal Al Spike (μg/L)	Measured Total Al (μg/L)
NOEC =	5000	5260
LOEC =	>5000	>5260
EC_{50} =	>5000	>5260

nm – not measured.

A – This test treatment was used in determination of measured total Al EC_{50} values (test treatments for which test solutions were not used in the calculation of the statistical endpoints are shaded gray).

Table B-2. Summary of results for total aluminum in the "Lab" Water (10 mg/L hardness).

Nominal Spike (μg/L Al)	Measured Al Concentration at Test Initiation (μg/L)	% Survival				
		Rep A	Rep B	Rep C	Rep D	**Mean**
0	5.3	80	100	80	100	**90**
82	86	80	80	100	80	**85**
118	107	60	100	80	60	**75**
168	150	60	80	60	40	**60**
240	212	60	60	80	40	**60**
343	303	40	40	80	40	**50**
490	438	40	40	60	20	**40**
700	662	40	20	40	40	**35**
1000	933	40	20	40	0	**25**

Critical Values	Nominal Al Spike (μg/L)	Measured Total Al (μg/L)
NOEC =	118	107
LOEC =	168	150
EC_{50} (95% CI) =	419 (243-678)	384 (224-626)

Appendix C

Summary of Statistical Analysis for Determination of Aluminum EC_{50} Values for SMD 1 WWTP Effluent and "Lab" Water Based on the "Nominal" Al Concentrations

CETIS Summary Report

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Batch ID:	05-1253-8047	**Test Type:**	Survival (48h)	**Analyst:**	Alison Briden
Start Date:	20 Jul-10 14:45	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	22 Jul-10 14:45	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	48h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	05-0806-8300	**Code:**	Eff	**Client:**	Robertson Bryan, Inc.
Sample Date:	20 Jul-10 06:50	**Material:**	Aluminum in Effluent	**Project:**	17155
Receive Date:	20 Jul-10 08:35	**Source:**	County of Placer		
Sample Age:	8h (7.7 °C)	**Station:**	SMD1		

Batch Note: Nominal Al Concentrations

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
12-5135-8557	48h Survival Rate	5000	>5000	N/A	N/A		Fisher Exact Test

48h Survival Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Effluent Control	4	1	1	1	1	1	0	0	0.0%	0.0%
288		4	1	1	1	1	1	0	0	0.0%	0.0%
412		4	1	1	1	1	1	0	0	0.0%	0.0%
588		4	1	1	1	1	1	0	0	0.0%	0.0%
840		4	1	1	1	1	1	0	0	0.0%	0.0%
1201		4	1	1	1	1	1	0	0	0.0%	0.0%
1715		4	1	1	1	1	1	0	0	0.0%	0.0%
2450		4	1	1	1	1	1	0	0	0.0%	0.0%
3500		4	1	1	1	1	1	0	0	0.0%	0.0%
5000		4	1	1	1	1	1	0	0	0.0%	0.0%

48h Survival Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Effluent Control	1	1	1	1
288		1	1	1	1
412		1	1	1	1
588		1	1	1	1
840		1	1	1	1
1201		1	1	1	1
1715		1	1	1	1
2450		1	1	1	1
3500		1	1	1	1
5000		1	1	1	1

CETIS Analytical Report

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Analysis ID:	12-5135-8557	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	23 Jul-10 8:40	**Analysis:**	Single 2x2 Contingency Table	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Untransformed		C > T	Not Run	5000	>5000	N/A		N/A

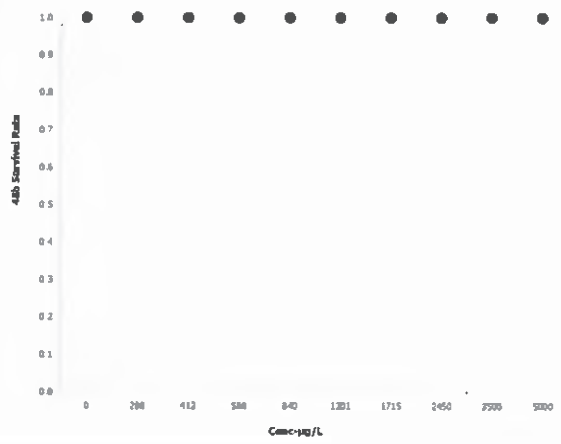
Fisher Exact Test

Control	vs	Conc-µg/L	Test Stat	P-Value	Decision(0.05)
Dilution Water		288	1	1.0000	Non-Significant Effect
		412	1	1.0000	Non-Significant Effect
		588	1	1.0000	Non-Significant Effect
		840	1	1.0000	Non-Significant Effect
		1201	1	1.0000	Non-Significant Effect
		1715	1	1.0000	Non-Significant Effect
		2450	1	1.0000	Non-Significant Effect
		3500	1	1.0000	Non-Significant Effect
		5000	1	1.0000	Non-Significant Effect

Data Summary

Conc-µg/L	Control Type	No-Resp	Resp	Total
0	Dilution Water	20	0	20
288		20	0	20
412		20	0	20
588		20	0	20
840		20	0	20
1201		20	0	20
1715		20	0	20
2450		20	0	20
3500		20	0	20
5000		20	0	20

Graphics



48 Hour Acute *Ceriodaphnia dubia* Toxicity Test Data

Client: Placer | Test Date: 7-20-10
Test Material: Aluminum in Effluent | Control/Diluent: Effluent
Test ID#: 39580 | Project #: 17155 | Control Water Batch: NA
Feeding To Time: 1330 | Initials: AB

Treatment (µg Al/L)	Temp (°C)	pH New	pH Old	D.O. New	D.O. Old	Conductivity (µS/cm)	# Live Animals A	B	C	D	Sign-Off
0	21.0	7.47		8.7		590	5	5	5	5	Test Solution Prep: AB
288	21.0	7.46		8.7		590	5	5	5	5	Sample ID: 24058
412	21.0	7.43		8.8		590	5	5	5	5	New WQ: CG/AB
588	21.0	7.42		8.7		590	5	5	5	5	Initiation Date: 7-20-10
840	21.0	7.42		8.7		590	5	5	5	5	Initiation Time: 1445
1201	21.0	7.43		8.8		593	5	5	5	5	Initiation Signoff: AB
1715	21.0	7.45		8.7		590	5	5	5	5	
2450	21.0	7.44		8.8		593	5	5	5	5	
3500	21.0	7.43		8.7		596	5	5	5	5	
5000	21.0	7.39		8.7		600	5	5	5	5	
Meter ID	48A	pH03		RD04		EC05					
0	20.9		8.04		8.4	615	5	5	5	5	Count Date: 7-21-10
288	20.9		8.03		8.5	611	5	5	5	5	Count Time: 1530
412	20.9		8.01		8.5	610	5	5	5	5	Count Signoff: AB
588	20.9		8.01		8.5	609	5	5	5	5	Old WQ: AB
840	20.9		8.01		8.5	610	5	6	6	5	
1201	20.9		8.05		8.6	611	5	5	6	6	
1715	20.9		8.00		8.6	611	5	5	5	5	
2450	20.9		7.96		8.5	612	5	5	5	5	
3500	20.9		7.93		8.6	616	5	5	5	5	
5000	20.9		7.88		8.6	622	5	5	5	5	
Meter ID	48A		pH14		RD03	EC03					
0	20.7		8.08		8.8	617	5	5	5	5	Termination Date: 7-22-10
288	20.7		8.10		8.8	614	5	5	5	5	Termination Time: 1445
412	20.7		8.10		8.8	614	5	5	5	5	Termination Signoff: AB
588	20.7		8.07		8.7	614	5	5	5	5	Old WQ: AB
840	20.7		8.02		8.7	624	5	5	5	5	
1201	20.7		8.05		8.8	617	5	5	5	5	
1715	20.7		8.03		8.8	615	5	5	5	5	
2450	20.7		8.01		8.7	616	5	5	5	5	
3500	20.7		7.97		8.8	618	5	5	5	5	
5000	20.7		7.89		8.8	629	5	5	5	5	
Meter ID	~~20.7~~ 48A		pH12		RD04	EC03					

48 Hour Acute *Ceriodaphnia dubia* Toxicity Test Data

Client: Placer
Test Material: Lab Water Control
Test ID#: 39579 Project # 17155
Feeding T0 Time: 1330 Initials: XB

Test Date: 7-20-10
Control/Diluent: 80:20
Control Water Batch: NA

Treatment	Temp (°C)	pH New	pH Old	D.O. New	D.O. Old	Conductivity (µS/cm)	# Live Animals A	B	C	D	Sign-Off
Control	20.9	7.57		8.7		219	5	5	5	5	Test Solution Prep: XB
											New WQ: XB
											Initiation Date: 7-20-10
											Initiation Time: 1445
											Initiation Signoff: XB
Meter ID	48A	pH03		RD04		EC05					
Control	20.9		7.75		8.6	225	5	5	5	5	Count Date: 7-21-10
											Count Time: 1530
											Count Signoff: XB
											Old WQ: XB
Meter ID	48A		pH12		RD04	EC04					
Control	20.7		8.20		8.8	224	5	5	5	5	Termination Date: 7-22-10
											Termination Time: 1445
											Termination Signoff: XB
											Old WQ: XB
Meter ID	48A		pH12		RD04	EC03					

CETIS Summary Report

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Batch ID:	13-2353-6618	**Test Type:**	Survival (48h)	**Analyst:**	Alison Briden
Start Date:	20 Jul-10 18:50	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	22 Jul-10 18:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	48h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	18-8571-8486	**Code:**	LW	**Client:**	Robertson Bryan, Inc.
Sample Date:	20 Jul-10 08:30	**Material:**	Aluminum in Lab Water	**Project:**	17155
Receive Date:	20 Jul-10 08:30	**Source:**	County of Placer		
Sample Age:	10h	**Station:**	In House		

Batch Note: Nominal Al Concentrations

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
09-7024-7800	48h Survival Rate	118	168	141	30.1%		Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
00-9564-0229	48h Survival Rate	EC1	15.9	0.533	51.6		Linear Regression (MLE)
		EC5	41.4	3.51	100		
		EC10	69.1	9.53	143		
		EC15	97.6	18.6	184		
		EC20	128	31.3	226		
		EC25	162	48.7	272		
		EC40	294	140	457		
		EC50	419	243	678		

48h Survival Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.9	0.857	0.943	0.8	1	0.0211	0.115	12.8%	0.0%
82		4	0.85	0.813	0.887	0.8	1	0.0183	0.1	11.8%	5.56%
118		4	0.75	0.678	0.822	0.6	1	0.035	0.191	25.5%	16.7%
168		4	0.6	0.539	0.661	0.4	0.8	0.0298	0.163	27.2%	33.3%
240		4	0.6	0.539	0.661	0.4	0.8	0.0298	0.163	27.2%	33.3%
343		4	0.5	0.425	0.575	0.4	0.8	0.0365	0.2	40.0%	44.4%
490		4	0.4	0.339	0.461	0.2	0.6	0.0298	0.163	40.8%	55.6%
700		4	0.35	0.313	0.387	0.2	0.4	0.0183	0.1	28.6%	61.1%
1000		4	0.25	0.178	0.322	0	0.4	0.035	0.191	76.6%	72.2%

48h Survival Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	0.8	1	0.8	1
82		0.8	0.8	1	0.8
118		0.6	1	0.8	0.6
168		0.6	0.8	0.6	0.4
240		0.6	0.6	0.8	0.4
343		0.4	0.4	0.8	0.4
490		0.4	0.4	0.6	0.2
700		0.4	0.2	0.4	0.4
1000		0.4	0.2	0.4	0

Acute Ceriodaphnia Survival Test — Pacific EcoRisk

Analysis ID:	09-7024-7800	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	23 Jul-10 8:56	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	118	168	141		30.1%

Dunnett's Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	P-Value	Decision(5%)
Lab Water Control		82	0.481	2.51	0.311	0.7367	Non-Significant Effect
		118	1.38	2.51	0.311	0.3349	Non-Significant Effect
		168*	2.71	2.51	0.311	0.0329	Significant Effect
		240*	2.71	2.51	0.311	0.0329	Significant Effect
		343*	3.52	2.51	0.311	0.0050	Significant Effect
		490*	4.42	2.51	0.311	0.0005	Significant Effect
		700*	4.83	2.51	0.311	0.0002	Significant Effect
		1000*	5.75	2.51	0.311	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1.908328	0.238541	8	7.8	<0.0001	Significant Effect
Error	0.8257864	0.03058468	27			
Total	2.734114	0.2691256	35			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	2.59	20.1	0.9576	Equal Variances
Distribution	Shapiro-Wilk Normality	0.973		0.5018	Normal Distribution

48h Survival Rate Summary

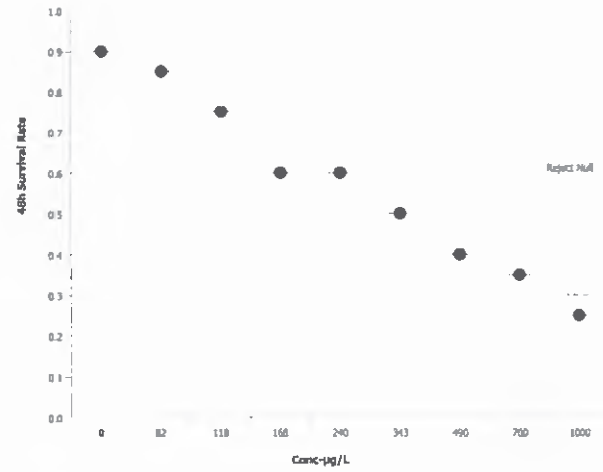
Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	0.9	0.856	0.944	0.8	1	0.0214	0.115	12.8%	0.0%
82		4	0.85	0.812	0.888	0.8	1	0.0186	0.1	11.8%	5.56%
118		4	0.75	0.677	0.823	0.6	1	0.0356	0.191	25.5%	16.7%
168		4	0.6	0.538	0.662	0.4	0.8	0.0303	0.163	27.2%	33.3%
240		4	0.6	0.538	0.662	0.4	0.8	0.0303	0.163	27.2%	33.3%
343		4	0.5	0.424	0.576	0.4	0.8	0.0371	0.2	40.0%	44.4%
490		4	0.4	0.338	0.462	0.2	0.6	0.0303	0.163	40.8%	55.6%
700		4	0.35	0.312	0.388	0.2	0.4	0.0186	0.1	28.6%	61.1%
1000		4	0.25	0.177	0.323	0	0.4	0.0356	0.191	76.6%	72.2%

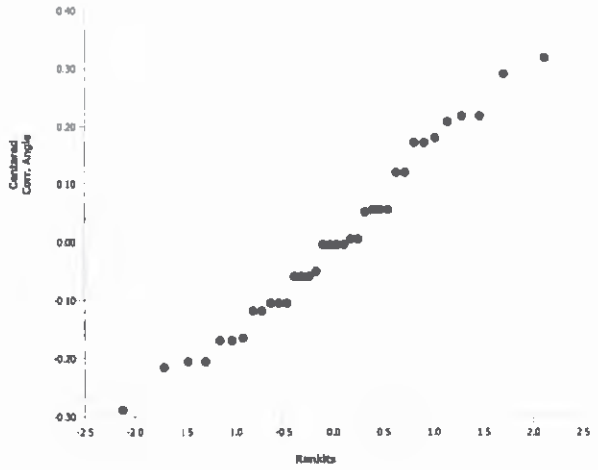
Angular (Corrected) Transformed Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Cont	4	1.23	1.17	1.28	1.11	1.35	0.0255	0.137	11.2%	0.0%
82		4	1.17	1.12	1.21	1.11	1.35	0.0221	0.119	10.2%	4.86%
118		4	1.06	0.973	1.14	0.886	1.35	0.0407	0.219	20.7%	13.9%
168		4	0.891	0.825	0.957	0.685	1.11	0.032	0.173	19.4%	27.3%
240		4	0.891	0.825	0.957	0.685	1.11	0.032	0.173	19.4%	27.3%
343		4	0.79	0.71	0.871	0.685	1.11	0.0392	0.211	26.7%	35.5%
490		4	0.68	0.614	0.745	0.464	0.886	0.032	0.173	25.4%	44.6%
700		4	0.629	0.587	0.671	0.464	0.685	0.0205	0.111	17.6%	48.7%
1000		4	0.515	0.431	0.598	0.226	0.685	0.0407	0.219	42.6%	58.0%

Acute Ceriodaphnia Survival Test					Pacific EcoRisk
Analysis ID:	09-7024-7800	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	23 Jul-10 8:56	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





Acute Ceriodaphnia Survival Test — Pacific EcoRisk

Analysis ID: 00-9564-0229 Endpoint: 48h Survival Rate CETIS Version: CETISv1.7.0
Analyzed: 23 Jul-10 8:56 Analysis: Linear Regression (MLE) Official Results: Yes

Linear Regression Options

Model Function	Threshold Option	Threshold	Optimized	Pooled	Het Corr	Weighted
Log-Normal [NED=A+B*log(X)]	Control Threshold	0.1	Yes	No	No	Yes

Regression Summary

Iters	LL	AICc	Mu	Sigma	G Stat	Chi-Sq	Critical	P-Value	Decision(5%)
9	-93	190	0.433	0.611	0.248	14	43.8	0.9940	Non-Significant Heterogeneity

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC1	15.9	0.533	51.6
EC5	41.4	3.51	100
EC10	69.1	9.53	143
EC15	97.6	18.6	184
EC20	128	31.3	226
EC25	162	48.7	272
EC40	294	140	457
EC50	419	243	678

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(5%)
Threshold	0.0916	0.0633	-0.0324	0.216	1.45	0.1580	Non-Significant Parameter
Slope	1.64	0.415	0.822	2.45	3.94	0.0005	Significant Parameter
Intercept	0.708	1.07	-1.38	2.8	0.663	0.5122	Non-Significant Parameter

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Variances	Bartlett Equality of Variance	2.28	14.1	0.9431	Equal Variances
	Mod Levene Equality of Variance	0.459	2.42	0.8540	Equal Variances
Distribution	Shapiro-Wilk Normality	0.973		0.5941	Normal Distribution

48h Survival Rate Summary

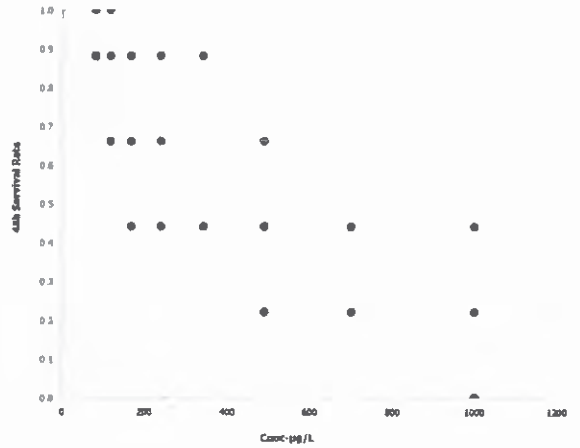
			Calculated Variate(A/B)								
Conc-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
0	Lab Water Contr	4	0.9	0.8	1	0.0211	0.115	12.8%	0.0%	18	20
82		4	0.85	0.8	1	0.0183	0.1	11.8%	5.56%	17	20
118		4	0.75	0.6	1	0.035	0.191	25.5%	16.7%	15	20
168		4	0.6	0.4	0.8	0.0298	0.163	27.2%	33.3%	12	20
240		4	0.6	0.4	0.8	0.0298	0.163	27.2%	33.3%	12	20
343		4	0.5	0.4	0.8	0.0365	0.2	40.0%	44.4%	10	20
490		4	0.4	0.2	0.6	0.0298	0.163	40.8%	55.6%	8	20
700		4	0.35	0.2	0.4	0.0183	0.1	28.6%	61.1%	7	20
1000		4	0.25	0	0.4	0.035	0.191	76.6%	72.2%	5	20

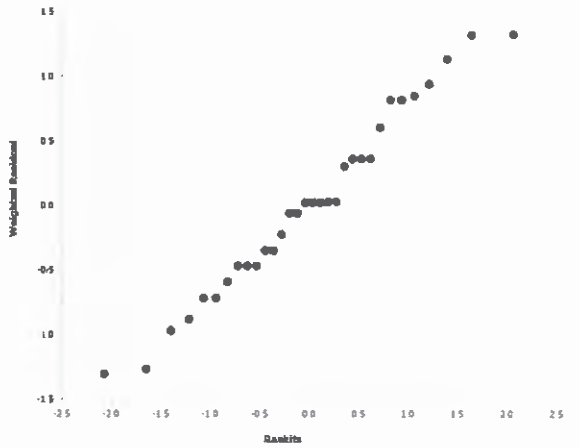
48h Survival Rate Detail

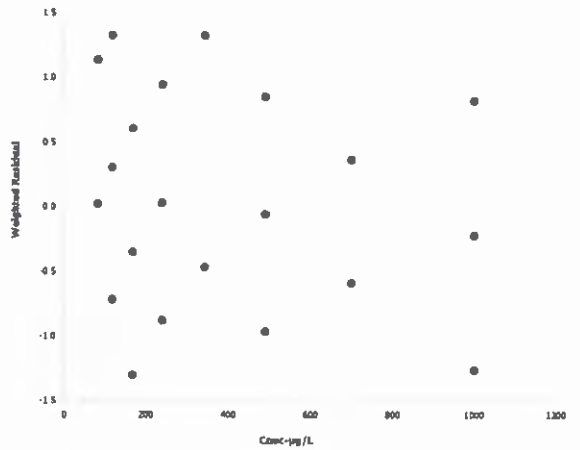
Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Control	0.8	1	0.8	1
82		0.8	0.8	1	0.8
118		0.6	1	0.8	0.6
168		0.6	0.8	0.6	0.4
240		0.6	0.6	0.8	0.4
343		0.4	0.4	0.8	0.4
490		0.4	0.4	0.6	0.2
700		0.4	0.2	0.4	0.4
1000		0.4	0.2	0.4	0

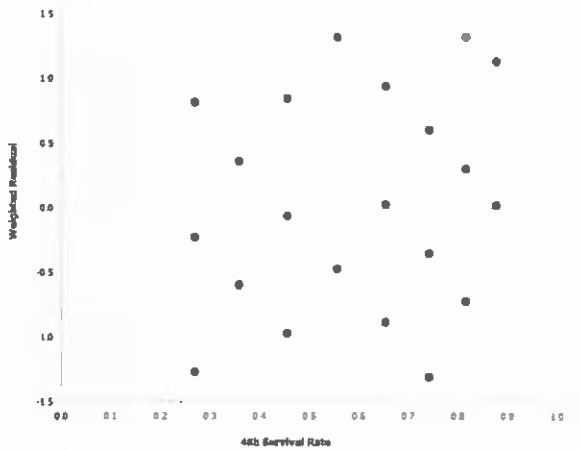
Acute Ceriodaphnia Survival Test					Pacific EcoRisk
Analysis ID:	00-9564-0229	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	23 Jul-10 8:56	**Analysis:**	Linear Regression (MLE)	**Official Results:**	Yes

Graphics









48 Hour Acute *Ceriodaphnia dubia* Toxicity Test Data

Client: Placer
Test Material: Aluminum in Lab Water
Test ID#: 39579 Project # 17155
Feeding To Time: 1330 Initials: AB

Test Date: 7-20-10
Control/Diluent: Lab Water
Control Water Batch: NA

Treatment (µg Al/L)	Temp (°C)	pH New	pH Old	D.O. New	D.O. Old	Conductivity (µS/cm)	# Live Animals A	B	C	D	Sign-Off
0	21.0	6.43		8.5		31	5	5	5	5	Test Solution Prep: AB
82.0	21.0	6.46		8.4		32	5	5	5	5	Sample ID: 24662
118.0	21.0	6.40		8.4		31	5	5	5	5	New WQ: AB
168.0	21.0	6.43		8.6		31	5	5	5	5	Initiation Date: 7-20-10
240.0	21.0	6.45		8.6		31	5	5	5	5	Initiation Time: 1850
343.0	21.0	6.45		8.4		31	5	5	5	5	Initiation Signoff: AB
490.0	21.0	6.49		8.4		32	5	5	5	5	
700.0	21.0	6.47		8.4		34	5	5	5	5	
1000.0	21.0	6.45		8.4		38	5	5	5	5	
Meter ID	48A	pH03		RD04		EC05					
0	20.9		6.84		8.7	33	5	5	5	5	Count Date: 7-21-10
82.0	20.9		6.86		8.9	36	5	5	5	5	Count Time: 1715
118.0	20.9		6.81		8.8	31	5	5	5	5	Count Signoff: AB
168.0	20.9		6.52		8.7	31	5	5	5	5	Old WQ: AB
240.0	20.9		6.48		8.7	31	5	5	5	5	
343.0	20.9		6.44		8.8	31	5	5	5	5	
490.0	20.9		6.47		8.8	32	5	5	5	5	
700.0	20.9		6.42		8.8	34	5	5	5	5	
1000.0	20.9		6.36		8.8	37	5	5	5	5	
Meter ID	48A		pH12		RD04	EC04					
0	20.7		6.75		8.6	35	4	5	4	5	Termination Date: 7-22-10
82.0	20.7		6.80		8.7	36	4	4	5	4	Termination Time: 1850
118.0	20.7		6.76		8.7	31	3,4 AB	5	4	3	Termination Signoff: AB
168.0	20.7		6.69		8.6	31	3	4	3	2	Old WQ: AB
240.0	20.7		6.64		8.6	31	3	3	4	3,2 AB	
343.0	20.7		6.56		8.4	30	2	3,2 AB	4	2	
490.0	20.7		6.65		8.6	31	2	2	3	1	
700.0	20.7		6.39		8.6	34	2	1	2	2	
1000.0	20.7		6.24		8.5	39	2	1	2	0	
Meter ID	48A		pH12		RD04	EC04					

Appendix D

Summary of Statistical Analysis for Determination of Aluminum EC_{50} Values for SMD 1 WWTP Effluent and "Lab" Water Based on the Measured Total Al Concentrations

CETIS Summary Report

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Batch ID:	05-1253-8047	**Test Type:**	Survival (48h)	**Analyst:**	Alison Briden
Start Date:	20 Jul-10 14:45	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	22 Jul-10 14:45	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	48h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	05-0806-8300	**Code:**	Eff	**Client:**	Robertson Bryan, Inc.
Sample Date:	20 Jul-10 06:50	**Material:**	Aluminum in Effluent	**Project:**	17155
Receive Date:	20 Jul-10 08:35	**Source:**	County of Placer		
Sample Age:	8h (7.7 °C)	**Station:**	SMD1		

Batch Note: Verified Al Concentrations

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-4882-6089	48h Survival Rate	5260	>5260	N/A	5.0%		Wilcoxon Rank Sum Two-Sample Test

48h Survival Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
40	Effluent Control	4	1	1	1	1	1	0	0	0.0%	0.0%
5260		4	1	1	1	1	1	0	0	0.0%	0.0%

48h Survival Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
40	Effluent Control	1	1	1	1
5260		1	1	1	1

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Analysis ID:	03-4882-6089	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	29 Jul-10 13:04	**Analysis:**	Nonparametric-Two Sample	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	5260	>5260	N/A		5.0%

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Conc-µg/L	Test Stat	Critical	Ties	P-Value	Decision(5%)
40		5260	18		1	0.4429	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	0	0	1	65500	<0.0001	Significant Effect
Error	0	0	6			
Total	0	0	7			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Mod Levene Equality of Variance	65500	13.7	<0.0001	Unequal Variances

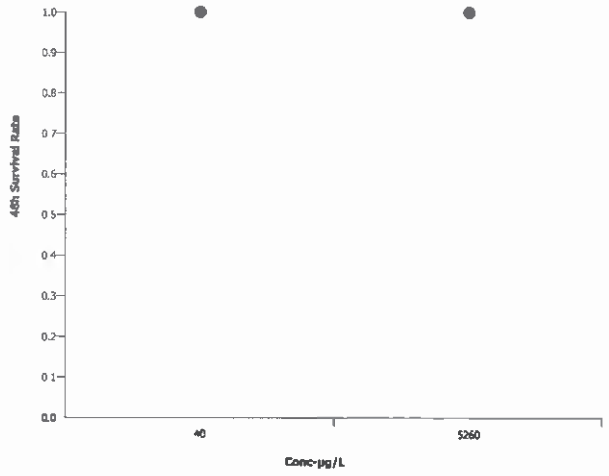
48h Survival Rate Summary

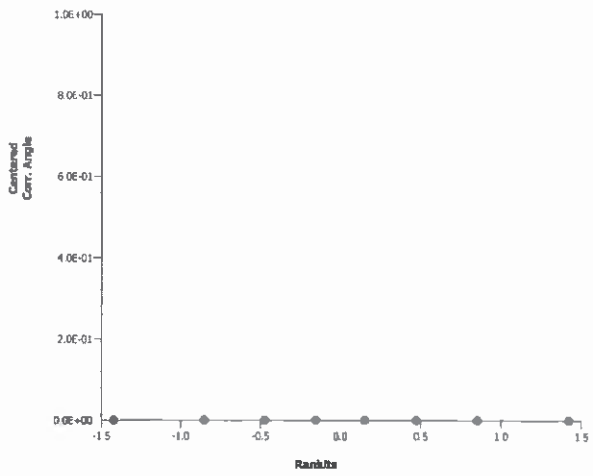
Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
40	Effluent Control	4	1	1	1	1	1	0	0	0.0%	0.0%
5260		4	1	1	1	1	1	0	0	0.0%	0.0%

Angular (Corrected) Transformed Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
40	Effluent Control	4	1.35	1.35	1.35	1.35	1.35	0	0	0.0%	0.0%
5260		4	1.35	1.35	1.35	1.35	1.35	0	0	0.0%	0.0%

Graphics





Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Batch ID:	13-2353-6618	**Test Type:**	Survival (48h)	**Analyst:**	Alison Briden
Start Date:	20 Jul-10 18:50	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	22 Jul-10 18:50	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	48h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	18-8571-8486	**Code:**	LW	**Client:**	Robertson Bryan, Inc.
Sample Date:	20 Jul-10 08:30	**Material:**	Aluminum in Lab Water	**Project:**	17155
Receive Date:	20 Jul-10 08:30	**Source:**	County of Placer		
Sample Age:	10h	**Station:**	In House		

Batch Note: Verified Al Concentrations

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
09-6153-3427	48h Survival Rate	107	150	127	30.1%		Dunnett's Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
10-5898-3361	48h Survival Rate	EC5	37.6	3.45	89.9		Linear Regression (MLE)
		EC10	62.8	9.25	130		
		EC15	88.8	17.9	167		
		EC20	117	29.9	205		
		EC25	148	46.3	247		
		EC40	269	131	419		
		EC50	384	224	626		

48h Survival Rate Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
5.3	Lab Water Contr	4	0.9	0.857	0.943	0.8	1	0.0211	0.115	12.8%	0.0%
86		4	0.85	0.813	0.887	0.8	1	0.0183	0.1	11.8%	5.56%
107		4	0.75	0.678	0.822	0.6	1	0.035	0.191	25.5%	16.7%
150		4	0.6	0.539	0.661	0.4	0.8	0.0298	0.163	27.2%	33.3%
212		4	0.6	0.539	0.661	0.4	0.8	0.0298	0.163	27.2%	33.3%
303		4	0.5	0.425	0.575	0.4	0.8	0.0365	0.2	40.0%	44.4%
438		4	0.4	0.339	0.461	0.2	0.6	0.0298	0.163	40.8%	55.6%
662		4	0.35	0.313	0.387	0.2	0.4	0.0183	0.1	28.6%	61.1%
933		4	0.25	0.178	0.322	0	0.4	0.035	0.191	76.6%	72.2%

48h Survival Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
5.3	Lab Water Contr	0.8	1	0.8	1
86		0.8	0.8	1	0.8
107		0.6	1	0.8	0.6
150		0.6	0.8	0.6	0.4
212		0.6	0.6	0.8	0.4
303		0.4	0.4	0.8	0.4
438		0.4	0.4	0.6	0.2
662		0.4	0.2	0.4	0.4
933		0.4	0.2	0.4	0

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Analysis ID:	09-6153-3427	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	29 Jul-10 12:58	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Data Transform	Zeta	Alt Hyp	Monte Carlo	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	0	C > T	Not Run	107	150	127		30.1%

Dunnett's Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	P-Value	Decision(5%)
5.3		86	0.481	2.51	0.311	0.7367	Non-Significant Effect
5.3		107	1.38	2.51	0.311	0.3349	Non-Significant Effect
5.3		150*	2.71	2.51	0.311	0.0329	Significant Effect
5.3		212*	2.71	2.51	0.311	0.0329	Significant Effect
5.3		303*	3.52	2.51	0.311	0.0050	Significant Effect
5.3		438*	4.42	2.51	0.311	0.0005	Significant Effect
5.3		662*	4.83	2.51	0.311	0.0002	Significant Effect
5.3		933*	5.75	2.51	0.311	<0.0001	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(5%)
Between	1.908328	0.238541	8	7.8	<0.0001	Significant Effect
Error	0.8257864	0.03058468	27			
Total	2.734114	0.2691256	35			

ANOVA Assumptions

Attribute	Test	Test Stat	Critical	P-Value	Decision(1%)
Variances	Bartlett Equality of Variance	2.59	20.1	0.9576	Equal Variances
Distribution	Shapiro-Wilk Normality	0.973		0.5018	Normal Distribution

48h Survival Rate Summary

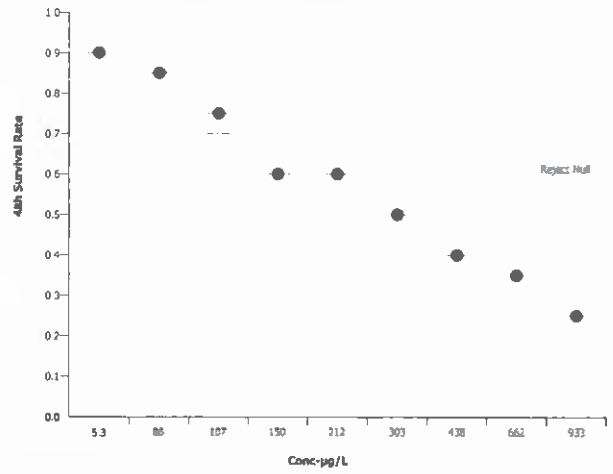
Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
5.3	Lab Water Contr	4	0.9	0.856	0.944	0.8	1	0.0214	0.115	12.8%	0.0%
86		4	0.85	0.812	0.888	0.8	1	0.0186	0.1	11.8%	5.56%
107		4	0.75	0.677	0.823	0.6	1	0.0356	0.191	25.5%	16.7%
150		4	0.6	0.538	0.662	0.4	0.8	0.0303	0.163	27.2%	33.3%
212		4	0.6	0.538	0.662	0.4	0.8	0.0303	0.163	27.2%	33.3%
303		4	0.5	0.424	0.576	0.4	0.8	0.0371	0.2	40.0%	44.4%
438		4	0.4	0.338	0.462	0.2	0.6	0.0303	0.163	40.8%	55.6%
662		4	0.35	0.312	0.388	0.2	0.4	0.0186	0.1	28.6%	61.1%
933		4	0.25	0.177	0.323	0	0.4	0.0356	0.191	76.6%	72.2%

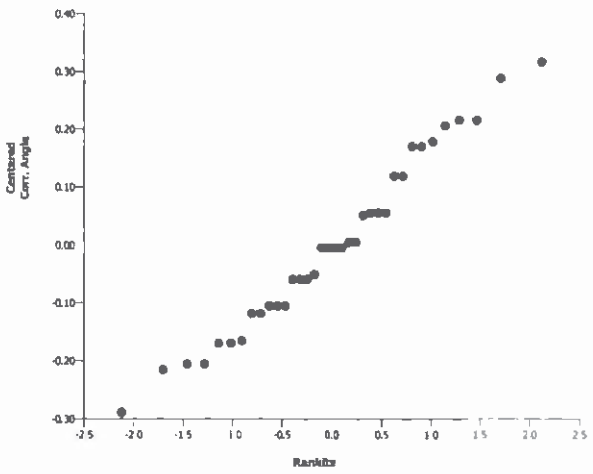
Angular (Corrected) Transformed Summary

Conc-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
5.3	Lab Water Cont	4	1.23	1.17	1.28	1.11	1.35	0.0255	0.137	11.2%	0.0%
86		4	1.17	1.12	1.21	1.11	1.35	0.0221	0.119	10.2%	4.86%
107		4	1.06	0.973	1.14	0.886	1.35	0.0407	0.219	20.7%	13.9%
150		4	0.891	0.825	0.957	0.685	1.11	0.032	0.173	19.4%	27.3%
212		4	0.891	0.825	0.957	0.685	1.11	0.032	0.173	19.4%	27.3%
303		4	0.79	0.71	0.871	0.685	1.11	0.0392	0.211	26.7%	35.5%
438		4	0.68	0.614	0.745	0.464	0.886	0.032	0.173	25.4%	44.6%
662		4	0.629	0.567	0.671	0.464	0.685	0.0205	0.111	17.6%	48.7%
933		4	0.515	0.431	0.598	0.226	0.685	0.0407	0.219	42.6%	58.0%

Acute Ceriodaphnia Survival Test					Pacific EcoRisk
Analysis ID:	09-6153-3427	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	29 Jul-10 12:58	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Analysis ID:	10-5898-3361	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.7.0
Analyzed:	29 Jul-10 12:58	**Analysis:**	Linear Regression (MLE)	**Official Results:**	Yes

Linear Regression Options

Model Function	Threshold Option	Threshold	Optimized	Pooled	Het Corr	Weighted
Log-Normal [NED=A+B*log(X)]	Control Threshold	0.1	Yes	No	No	Yes

Regression Summary

Iters	LL	AICc	Mu	Sigma	G Stat	Chi-Sq	Critical	P-Value	Decision(5%)
9	-93.4	191	0.484	0.614	0.24	14.4	43.8	0.9930	Non-Significant Heterogeneity

Point Estimates

Level	µg/L	95% LCL	95% UCL
EC5	37.6	3.45	89.9
EC10	62.8	9.25	130
EC15	88.8	17.9	167
EC20	117	29.9	205
EC25	148	46.3	247
EC40	269	131	419
EC50	384	224	626

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(5%)
Threshold	0.0913	0.0635	-0.0332	0.216	1.44	0.1611	Non-Significant Parameter
Slope	1.63	0.407	0.832	2.43	4	0.0004	Significant Parameter
Intercept	0.789	1.03	-1.23	2.8	0.767	0.4490	Non-Significant Parameter

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(5%)
Variances	Bartlett Equality of Variance	2.37	14.1	0.9369	Equal Variances
	Mod Levene Equality of Variance	0.471	2.42	0.8461	Equal Variances
Distribution	Shapiro-Wilk Normality	0.975		0.6593	Normal Distribution

48h Survival Rate Summary

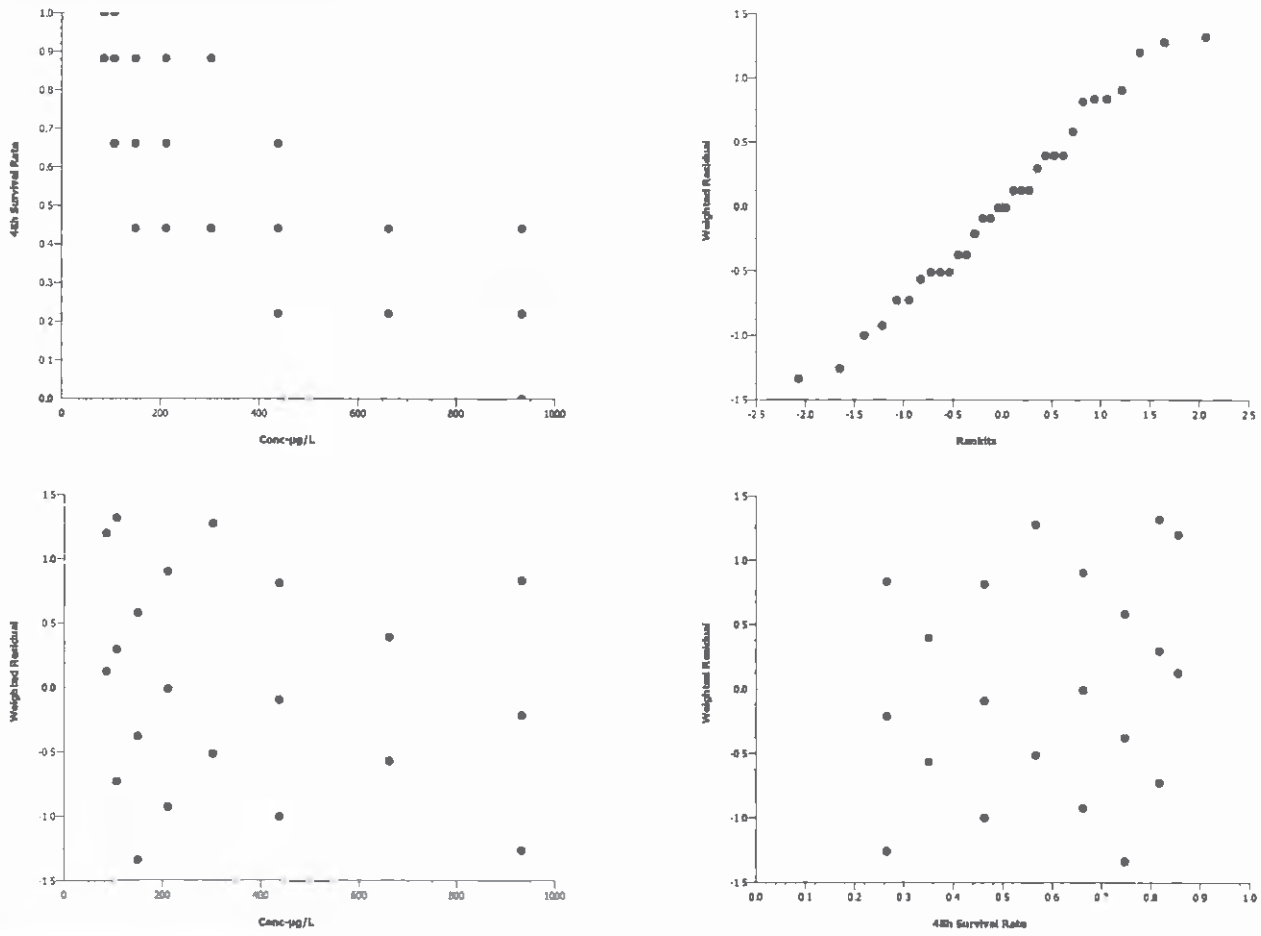
			Calculated Variate(A/B)								
Conc-µg/L	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	Diff%	A	B
5.3	Lab Water Contro	4	0.9	0.8	1	0.0211	0.115	12.8%	0.0%	18	20
86		4	0.85	0.8	1	0.0183	0.1	11.8%	5.56%	17	20
107		4	0.75	0.6	1	0.035	0.191	25.5%	16.7%	15	20
150		4	0.6	0.4	0.8	0.0298	0.163	27.2%	33.3%	12	20
212		4	0.6	0.4	0.8	0.0298	0.163	27.2%	33.3%	12	20
303		4	0.5	0.4	0.8	0.0365	0.2	40.0%	44.4%	10	20
438		4	0.4	0.2	0.6	0.0298	0.163	40.8%	55.6%	8	20
662		4	0.35	0.2	0.4	0.0183	0.1	28.6%	61.1%	7	20
933		4	0.25	0	0.4	0.035	0.191	76.6%	72.2%	5	20

48h Survival Rate Detail

Conc-µg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
5.3	Lab Water Control	0.8	1	0.8	1
86		0.8	0.8	1	0.8
107		0.6	1	0.8	0.6
150		0.6	0.8	0.6	0.4
212		0.6	0.6	0.8	0.4
303		0.4	0.4	0.8	0.4
438		0.4	0.4	0.6	0.2
662		0.4	0.2	0.4	0.4
933		0.4	0.2	0.4	0

Acute Ceriodaphnia Survival Test					Pacific EcoRisk
Analysis ID:	10-5898-3361	Endpoint:	48h Survival Rate	CETIS Version:	CETISv1.7.0
Analyzed:	29 Jul-10 12:58	Analysis:	Linear Regression (MLE)	Official Results:	Yes

Graphics



Appendix E

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of *Ceriodaphnia dubia*

CETIS Summary Report

Acute Ceriodaphnia Survival Test — **Pacific EcoRisk**

Batch ID:	03-9883-4608	**Test Type:**	Survival (48h)	**Analyst:**	Padrick Anderson
Start Date:	20 Jul-10 18:45	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water
Ending Date:	22 Jul-10 17:45	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	47h	**Source:**	In-House Culture	**Age:**	1

Sample ID:	05-7213-5537	**Code:**	39581	**Client:**	Pacific Ecorisk
Sample Date:	20 Jul-10 18:45	**Material:**	Sodium chloride	**Project:**	17156
Receive Date:	20 Jul-10 18:45	**Source:**	Reference Toxicant		
Sample Age:	N/A (21 °C)	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
10-0374-0401	48h Survival Rate	2000	3000	2450	12.5%		Steel Many-One Rank Test

Point Estimate Summary

Analysis ID	Endpoint	Level	mg/L	95% LCL	95% UCL	TU	Method
16-9490-4759	48h Survival Rate	EC1	1760	1220	2080		Linear Regression (MLE)
		EC5	2030	1540	2320		
		EC10	2200	1740	2470		
		EC15	2310	1890	2570		
		EC20	2410	2010	2660		
		EC25	2500	2130	2750		
		EC40	2730	2420	2990		
		EC50	2880	2600	3160		

48h Survival Rate Summary

Conc-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	Diff%
0	Lab Water Contr	4	1	1	1	1	1	0	0	0.0%	0.0%
500		4	1	1	1	1	1	0	0	0.0%	0.0%
1000		4	1	1	1	1	1	0	0	0.0%	0.0%
2000		4	0.95	0.913	0.987	0.8	1	0.0183	0.1	10.5%	5.0%
3000		4	0.45	0.413	0.487	0.4	0.6	0.0183	0.1	22.2%	55.0%
4000		4	0.05	0.0127	0.0873	0	0.2	0.0183	0.1	200.0%	95.0%

48h Survival Rate Detail

Conc-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4
0	Lab Water Contr	1	1	1	1
500		1	1	1	1
1000		1	1	1	1
2000		1	1	1	0.8
3000		0.6	0.4	0.4	0.4
4000		0	0	0.2	0

48 Hour Acute *Ceriodaphnia dubia* Reference Toxicant Toxicity Test Data

Client: **Reference Toxicant** Test Date: 7/20/10
Test Material: Sodium Chloride Control/Diluent: 80:20
Test ID#: 39581 Project #: 17156 Control Water Batch: 6911
Randomization: Board 15
Feeding To Time: 1555 Initials: CSB

Treatment mg/L	Temp	pH Old	pH New	D.O. Old	D.O. New	Conductivity (µS/cm)	# Live Animals A	B	C	D	Sign-Off
Control	21.0		8.30		8.7	225	5	5	5	5	Date: 7/20/10
500	21.0		8.23		9.1	1136	5	5	5	5	Test Solution Prep: SM
1000	21.0		8.14		9.7	2080	5	5	5	5	New WQ: MM
2000	21.0		8.06		10.2	4000	5	5	5	5	Initiation Time: 1545
3000	21.0		7.96		11.2	5740	5	5	5	5	Initiation Signoff: SM
4000	21.0		7.87		11.4	7470	5	5	5	5	RT Stock Batch #: 23
Meter ID	41A		PH14		RD04	EC05					
Control	20.8	8.43		6.8		2858 CM	5	5	5	5	Date: 7/21/10
500	20.8	8.33		7.0		1180	5	5	5	5	Count Time: 0815
1000	20.8	8.29		7.0		2099	5	5	5	5	Count Signoff: VM
2000	20.8	8.25		6.9		3990	5	5	5	5	Old WQ: ON
3000	20.8	8.22		6.9		5760	5	5	4	4	
4000	20.8	8.21		6.8		7620	2	1	2	3	
Meter ID	48A	PH03		RD03		EC03					
Control	20.7	7.94		7.9		240	5	5	5	5	Date: 7/22/10
500	20.7	7.90		8.1		1218	5	5	5	5	Termination Time: 1745
1000	20.7	7.89		8.5		2181	5	5	5	5	Termination Signoff: RAM
2000	20.7	7.86		8.5		4170	5	5	5	4	Old WQ: RAM
3000	20.7	7.88		8.5		5930	43	2	2	2	
4000	20.7	7.87		8.4		7810	0	0	1	0	
Meter ID	48A	PH12		RD04		EC03					

Appendix F

Analytical Chemistry Laboratory Data Report(s)

Caltest ANALYTICAL LABORATORY

ENVIRONMENTAL ANALYSES

Friday, July 30, 2010

Mike Bryan
Robertson-Bryan, Inc.
9888 Kent Street
Elk Grove, CA 95624

RE:	Lab Order:	K070820	Collected By:	PACIFIC ECO RISK
	Project ID:	106 Placer County SMD1 (1of2)	PO/Contract #:	17155

Dear Mike Bryan:

Enclosed are the analytical results for sample(s) received by the laboratory between Wednesday, July 21, 2010 and Friday, July 23, 2010. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

CC: Alison Briden, Pacific EcoRisk

Enclosures

Project Manager: Todd Albertson

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SAMPLE SUMMARY

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

Lab ID	Sample ID	Matrix	Date Collected	Date Received
K070820001	LW-DOC-TO	Water	7/20/2010 20:30	7/23/2010 10:21
K070820002	EFF-DOC-TO	Water	7/20/2010 20:25	7/23/2010 10:21
K070820003	LW-TOC-TO	Water	7/20/2010 20:31	7/23/2010 10:21
K070820004	EFF-TOC-TO	Water	7/20/2010 20:26	7/23/2010 10:21
K070820005	LW-TSS-TO	Water	7/20/2010 20:32	7/23/2010 10:21
K070820006	EFF-TSS-TO	Water	7/20/2010 20:27	7/23/2010 10:21
K070820007	LW-TDS-TO	Water	7/20/2010 20:33	7/23/2010 10:21
K070820008	EFF-TDS-TO	Water	7/20/2010 20:28	7/23/2010 10:21
K070820009	LW-Al-Tot-0-TO	Water	7/20/2010 17:55	7/23/2010 10:23
K070820010	LW-Al-Tot-82-TO	Water	7/20/2010 17:56	7/23/2010 10:23
K070820011	LW-Al-Tot-118-TO	Water	7/20/2010 17:57	7/23/2010 10:23
K070820012	LW-Al-Tot-168-TO	Water	7/20/2010 17:58	7/23/2010 10:23
K070820013	LW-Al-Tot-240-TO	Water	7/20/2010 17:59	7/23/2010 10:23
K070820014	LW-Al-Tot-343-TO	Water	7/20/2010 18:00	7/23/2010 10:23
K070820015	LW-Al-Tot-490-TO	Water	7/20/2010 18:01	7/23/2010 10:23
K070820016	LW-Al-Tot-700-TO	Water	7/20/2010 18:02	7/23/2010 10.23
K070820017	LW-Al-Tot-1000-TO	Water	7/20/2010 18:03	7/23/2010 10:23
K070820018	EFF-Al-Tot-0-TO	Water	7/20/2010 13:50	7/23/2010 10:23
K070820019	EFF-Al-Tot-5000-TO	Water	7/20/2010 13:59	7/23/2010 10:23
K070820020	EFF-Al-Tot-288-TO	Water	7/20/2010 13:51	7/21/2010 10:23
K070820021	EFF-Al-Tot-412-TO	Water	7/20/2010 13:52	7/21/2010 10:23
K070820022	EFF-Al-Tot-588-TO	Water	7/20/2010 13:53	7/21/2010 10:23
K070820023	EFF-Al-Tot-840-TO	Water	7/20/2010 13:54	7/21/2010 10:23
K070820024	EFF-Al-Tot-1201-TO	Water	7/20/2010 13:55	7/21/2010 10:23
K070820025	EFF-Al-Tot-1715-TO	Water	7/20/2010 13:56	7/21/2010 10:23
K070820026	EFF-Al-Tot-2450-TO	Water	7/20/2010 13:57	7/21/2010 10:23
K070820027	EFF-Al-Tot-3500-TO	Water	7/20/2010 13:58	7/21/2010 10:23

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Caltest ANALYTICAL LABORATORY

ENVIRONMENTAL ANALYSES

NARRATIVE

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirety. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that all test results for wastewater and hazardous waste analyses meet all applicable NELAC requirements; all microbiology and drinking water testing meet applicable ELAP requirements, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods (SM) 18th Ed. except where noted.

Caltest collects samples in compliance with 40 CFR, EPA Methods, Cal. Title 22, and Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Filtrations performed at Caltest for dissolved metals (excluding mercury) and/or pH analysis were not performed within the 15 minute holding time as specified by 40CFR 136.3 table II

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - Non Detect - indicates analytical result has not been detected.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

E - indicates an estimated analytical result value.

B - indicates the analyte has been detected in the blank associated with the sample.

NC - means not able to be calculated for RPD or Spike Recoveries.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.

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ANALYTICAL RESULTS

Lab Order: K070820

Project ID 106 Placer County SMD1 (1of2)

Lab ID: K070820001 Date Collected: 7/20/2010 20:30 Matrix: Water
Sample ID: LW-DOC-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Dissolved Organic Carbon Analysis		**Analytical Method:**	SM20-5310 B					**Analyzed by:**	NP	
Dissolved Organic Carbon	J0.54	mg/L	1	0.10	1			07/23/10 00:00	WET 5622	

Lab ID: K070820002 Date Collected: 7/20/2010 20:25 Matrix: Water
Sample ID: EFF-DOC-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Dissolved Organic Carbon Analysis		**Analytical Method:**	SM20-5310 B					**Analyzed by:**	NP	
Dissolved Organic Carbon	8.5	mg/L	1	0.10	1			07/23/10 00:00	WET 5622	

Lab ID: K070820003 Date Collected: 7/20/2010 20:31 Matrix. Water
Sample ID: LW-TOC-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Organic Carbon Analysis		**Analytical Method:**	SM20-5310 B					**Analyzed by:**	NP	
Total Organic Carbon	1.2	mg/L	1	0.10	1			07/23/10 00:00	WET 5622	

Lab ID: K070820004 Date Collected: 7/20/2010 20:26 Matrix: Water
Sample ID: EFF-TOC-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Organic Carbon Analysis		**Analytical Method:**	SM20-5310 B					**Analyzed by:**	NP	
Total Organic Carbon	9.1	mg/L	1	0.10	1			07/23/10 00:00	WET 5622	

Lab ID: K070820005 Date Collected: 7/20/2010 20:32 Matrix: Water
Sample ID: LW-TSS-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Suspended Solids Analysis		**Analytical Method:**	SM20-2540 D					**Analyzed by:**	AMS	
Total Suspended Solids	ND	mg/L	3	2.0	1			07/23/10 11:01	BIO 8524	

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Caltest ANALYTICAL LABORATORY
ENVIRONMENTAL ANALYSES

ANALYTICAL RESULTS

Lab Order: K070820
Project ID 106 Placer County SMD1 (1of2)

Lab ID: K070820006 Date Collected: 7/20/2010 20:27 Matrix: Water
Sample ID: EFF-TSS-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Suspended Solids Analysis		**Analytical Method:**	SM20-2540 D					**Analyzed by:** AMS		
Total Suspended Solids	ND	mg/L	3	2.0	1			07/23/10 11:01	BIO 8524	

Lab ID: K070820007 Date Collected: 7/20/2010 20:33 Matrix: Water
Sample ID: LW-TDS-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Dissolved Solids Analysis		**Analytical Method:**	SM20-2540 C					**Analyzed by:** RTE		
Total Dissolved Solids	ND	mg/L	10	4.0	1			07/23/10 15:10	WGR 4221	

Lab ID: K070820008 Date Collected: 7/20/2010 20:28 Matrix: Water
Sample ID: EFF-TDS-TO Date Received: 7/23/2010 10:21

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Total Dissolved Solids Analysis		**Analytical Method:**	SM20-2540 C					**Analyzed by:** RTE		
Total Dissolved Solids	330	mg/L	10	4.0	1			07/23/10 15:10	WGR 4221	

Lab ID: K070820009 Date Collected: 7/20/2010 17:55 Matrix: Water
Sample ID: LW-Al-Tot-0-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Calculation, Hardness		**Analytical Method:**	Calculation					**Analyzed by:** LM		
Hardness Calculation	9.9	mg/L			1			07/26/10 19:40	CALC	
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	J5.3	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 19:40	MMS 5578	
Calcium	3.1	mg/L	0.05	0.030	1	07/24/10 00:00	MPR 9002	07/26/10 19:40	MMS 5578	
Magnesium	0.53	mg/L	0.050	0.00010	1	07/24/10 00:00	MPR 9002	07/26/10 19:40	MMS 5578	

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ANALYTICAL RESULTS

Lab Order: K070820

Project ID 106 Placer County SMD1 (1of2)

Lab ID: K070820010 Date Collected: 7/20/2010 17:56 Matrix: Water

Sample ID: LW-Al-Tot-82-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	86	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 19:56	MMS 5578	

Lab ID: K070820011 Date Collected: 7/20/2010 17:57 Matrix: Water

Sample ID: LW-Al-Tot-118-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	107	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 20:01	MMS 5578	

Lab ID: K070820012 Date Collected: 7/20/2010 17:58 Matrix: Water

Sample ID: LW-Al-Tot-168-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	150	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 20:23	MMS 5578	

Lab ID: K070820013 Date Collected: 7/20/2010 17:59 Matrix: Water

Sample ID: LW-Al-Tot-240-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	212	ug/L	10	3.2	2	07/24/10 00:00	MPR 9002	07/26/10 20:28	MMS 5578	

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ANALYTICAL RESULTS

Lab Order: K070820

Project ID 106 Placer County SMD1 (1of2)

Lab ID: K070820014 Date Collected: 7/20/2010 18:00 Matrix: Water

Sample ID: LW-Al-Tot-343-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	303	ug/L	10	3.2	2	07/24/10 00:00	MPR 9002	07/26/10 20:33	MMS 5578	

Lab ID: K070820015 Date Collected: 7/20/2010 18:01 Matrix: Water

Sample ID: LW-Al-Tot-490-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	438	ug/L	10	6.4	4	07/24/10 00:00	MPR 9002	07/26/10 20:38	MMS 5578	

Lab ID: K070820016 Date Collected: 7/20/2010 18:02 Matrix: Water

Sample ID: LW-Al-Tot-700-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	662	ug/L	10	6.4	4	07/24/10 00:00	MPR 9002	07/26/10 20:44	MMS 5578	

Lab ID: K070820017 Date Collected: 7/20/2010 18:03 Matrix: Water

Sample ID: LW-Al-Tot-1000-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	933	ug/L	10	8.0	5	07/24/10 00:00	MPR 9002	07/26/10 20:49	MMS 5578	

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ANALYTICAL RESULTS

Lab Order: K070820

Project ID 106 Placer County SMD1 (1of2)

Lab ID: K070820018 Date Collected: 7/20/2010 13:50 Matrix: Water

Sample ID: EFF-Al-Tot-0-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Calculation, Hardness		**Analytical Method:**	Calculation					**Analyzed by:** LM		
Hardness Calculation	150	mg/L			1			07/26/10 21:10	CALC	
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	40	ug/L	10	1.6	1	07/24/10 00:00	MPR 9003	07/26/10 21:10	MMS 5579	
Calcium	13	mg/L	0.05	0.030	1	07/24/10 00:00	MPR 9003	07/26/10 21:10	MMS 5579	
Magnesium	29.6	mg/L	0.050	0.00010	1	07/24/10 00:00	MPR 9003	07/26/10 21:10	MMS 5579	

Lab ID: K070820019 Date Collected: 7/20/2010 13:59 Matrix: Water

Sample ID: EFF-Al-Tot-5000-TO Date Received: 7/23/2010 10:23

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	5260	ug/L	100	80	50	07/24/10 00:00	MPR 9003	07/26/10 21:31	MMS 5579	

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Caltest ANALYTICAL LABORATORY

ENVIRONMENTAL ANALYSES

QUALITY CONTROL DATA

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

Analysis Description: Total Suspended Solids Analysis **QC Batch:** BIO/8524

Analysis Method: SM20-2540 D **QC Batch Method:** SM20-2540 D

METHOD BLANK: 342803

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Total Suspended Solids	ND	3	2	mg/L	

LABORATORY CONTROL SAMPLE: 342804

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	500	490	98	80-120	

SAMPLE DUPLICATE: 342877

Parameter	Units	K070001022 Result	DUP Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	2028	2000	0.8	20	

Analysis Description: **QC Batch:** CALC/

Analysis Method: Calculation **QC Batch Method:** Calculation

Analysis Description: Metals by ICPMS Collision Mode, Total **QC Batch:** MPR/9002

Analysis Method: EPA 200.8 **QC Batch Method:** EPA 200.8

METHOD BLANK: 342954

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Aluminum	J2.2	10	1.6	ug/L	
Calcium	ND	0.05	0.03	mg/L	
Magnesium	J0.009	0.050	0.0001	mg/L	

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QUALITY CONTROL DATA

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

Analysis Description: Metals by ICPMS Collision Mode, Total **QC Batch:** MPR/9002

Analysis Method: EPA 200.8 **QC Batch Method:** EPA 200.8

LABORATORY CONTROL SAMPLE: 342955

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	40	42	104	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Magnesium	mg/L	10	10	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 342956 342957

Parameter	Units	K070901001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Aluminum	ug/L	4.9	40	46	48	102	108	85-115	5.3	20	
Calcium	mg/L	3.1	10	13	13	102	102	85-115	0.3	20	
Magnesium	mg/L	0.53	10	11	10.9	105	104	85-115	1.3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 342958 342959

Parameter	Units	K070820009 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Aluminum	ug/L	5.3	40	44	47	98	104	85-115	5.6	20	
Calcium	mg/L	3.1	10	13	13	97	101	85-115	3	20	
Magnesium	mg/L	0.53	10	10.4	10.8	99	102	85-115	3.2	20	

Analysis Description: Metals by ICPMS Collision Mode, Total **QC Batch:** MPR/9009

Analysis Method: EPA 200.8 **QC Batch Method:** EPA 200.8

METHOD BLANK: 342960

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Aluminum	J2.0	10	1.6	ug/L	
Calcium	ND	0.05	0.03	mg/L	
Magnesium	J0.011	0.050	0.0001	mg/L	

LABORATORY CONTROL SAMPLE: 342961

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	40	44	109	85-115	
Calcium	mg/L	10	9.9	99	85-115	

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QUALITY CONTROL DATA

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

Analysis Description: Metals by ICPMS Collision Mode, Total **QC Batch:** MPR/9003

Analysis Method: EPA 200.8 **QC Batch Method:** EPA 200.8

LABORATORY CONTROL SAMPLE: 342961

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Magnesium	mg/L	10	10.3	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 342962 342963

Parameter	Units	K070825001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Aluminum	ug/L	177	40	303	307	316	326	85-115	1.4	20	1
Calcium	mg/L	26	10	36	36	100	103	85-115	0.7	20	
Magnesium	mg/L	10.4	10	20.6	20.9	102	106	85-115	1.5	20	

Analysis Description: Dissolved Organic Carbon Analysis **QC Batch:** WET/5622

Analysis Method: SM20-5310 B **QC Batch Method:** SM20-5310 B

METHOD BLANK: 343048

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Dissolved Organic Carbon	J0.16	1	0.1	mg/L	
Total Organic Carbon	J0.16	1	0.1	mg/L	

FILTER BLANK: 343054

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Dissolved Organic Carbon	J0.23	1	0.1	mg/L	
Total Organic Carbon	J0.23	1	0.1	mg/L	

LABORATORY CONTROL SAMPLE: 343049

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	10	10	100	80-120	
Total Organic Carbon	mg/L	10	10	100	80-120	

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QUALITY CONTROL DATA

Lab Order. K070820

Project ID: 106 Placer County SMD1 (1of2)

Analysis Description: Dissolved Organic Carbon Analysis **QC Batch:** WET/5622

Analysis Method: SM20-5310 B **QC Batch Method:** SM20-5310 B

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 343052 343053

Parameter	Units	K070520001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Dissolved Organic Carbon	mg/L	0.31	10	10	10	99	100	80-120	0.1	20	
Total Organic Carbon	mg/L	0.31	10	10	10	99	100	80-120	0.1	20	

Analysis Description: Total Dissolved Solids Analysis **QC Batch:** WGR/4221

Analysis Method: SM20-2540 C **QC Batch Method:** SM20-2540 C

METHOD BLANK: 342919

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Total Dissolved Solids	ND	10	4	mg/L	

LABORATORY CONTROL SAMPLE: 342920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	500	440	88	80-120	

SAMPLE DUPLICATE: 342921

Parameter	Units	K070708001 Result	DUP Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	119	140	13	20	

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QUALITY CONTROL DATA QUALIFIERS

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

QUALITY CONTROL PARAMETER QUALIFIERS

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

NC - means not able to be calculated for RPD or Spike Recoveries.

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

1	Spike recovery outside control limits. Spike added less than one half sample concentration. LCS and Method Blank are in control.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab Order: K070820

Project ID: 106 Placer County SMD1 (1of2)

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
K070820005	LW-TSS-TO	SM20-2540 D	BIO/8524		
K070820006	EFF-TSS-TO	SM20-2540 D	BIO/8524		
K070820009	LW-Al-Tot-0-TO	Calculation	CALC/	Calculation	CALC/
K070820018	EFF-Al-Tot-0-TO	Calculation	CALC/	Calculation	CALC/
K070820009	LW-Al-Tot-0-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820010	LW-Al-Tot-82-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820011	LW-Al-Tot-118-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820012	LW-Al-Tot-168-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820013	LW-Al-Tot-240-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820014	LW-Al-Tot-343-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820015	LW-Al-Tot-490-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820016	LW-Al-Tot-700-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820017	LW-Al-Tot-1000-TO	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070820018	EFF-Al-Tot-0-TO	EPA 200.8	MPR/9003	EPA 200.8	MMS/5579
K070820019	EFF-Al-Tot-5000-TO	EPA 200.8	MPR/9003	EPA 200.8	MMS/5579
K070820001	LW-DOC-TO	SM20-5310 B	WET/5622		
K070820002	EFF-DOC-TO	SM20-5310 B	WET/5622		
K070820003	LW-TOC-TO	SM20-5310 B	WET/5622		
K070820004	EFF-TOC-TO	SM20-5310 B	WET/5622		
K070820007	LW-TDS-TO	SM20-2540 C	WGR/4221		
K070820008	EFF-TDS-TO	SM20-2540 C	WGR/4221		

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Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Road, Fairfield, CA 94534
(707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Client Name:	Robertson-Bryan, Inc
Client Address:	9888 Kent Street Elk Grove, CA 95624
Sampled By:	Pacific EcoRisk
Phone:	(916) 714-1802
FAX:	(916) 714-1804
Project Manager:	Michael Bryan
Project Name:	106 Placer SMD 1
PER Project Number:	17155

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container Number	Container Type	Total Aluminum	Total Hardness (Ca + Mg Calculation)
1	EFF-Al-Tot–0-T0	20-Jul-10	1350	FW	1	500mL HDPE HNO3 Pres	X	X
2	~~EFF-Al-Tot-288-T0~~	~~20-Jul-10~~	~~1351~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
3	~~EFF-Al-Tot-412-T0~~	~~20-Jul-10~~	~~1352~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
4	~~EFF-Al-Tot-588-T0~~	~~20-Jul-10~~	~~1353~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
5	~~EFF-Al-Tot-840-T0~~	~~20-Jul-10~~	~~1354~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
6	~~EFF-Al-Tot-1201-T0~~	~~20-Jul-10~~	~~1355~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
7	~~EFF-Al-Tot-1715-T0~~	~~20-Jul-10~~	~~1356~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
8	~~EFF-Al-Tot-2450-T0~~	~~20-Jul-10~~	~~1357~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
9	~~EFF-Al-Tot-3500-T0~~	~~20-Jul-10~~	~~1358~~	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres~~	~~X~~	~~X~~
10	EFF-Al-Tot–5000-T0	20-Jul-10	1359	FW	1	500mL HDPE HNO3 Pres	X	

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	~~STD~~ 5	Specify:	4-day

Comments:

~~Please hold all samples until further notice~~ NS

Include T0 and T48 samples in the same report (MDL format with "J" flagging)
Please send a copy of the final report to Pacific EcoRisk, Attn: Alison Briden

Please analyze the samples that are not lined out on this COC. 7/23

RELIQUINSHED BY		RECEIVED BY	
Signature:		**Signature:**	
Print:	Alison Briden	**Print:**	
Organization:	PER	**Organization:**	
DATE: 7/21/10 **TIME:** 0925		**DATE:** **TIME:**	
Signature:	S. Rutland	**Signature:**	
Print:	S. Rutland	**Print:**	
Organization:	Caltest	**Organization:**	
DATE: 072110 **TIME:** 0925		**DATE:** **TIME:**	

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

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CHAIN-OF-CUSTODY RECORD

Client Name:	Robertson-Bryan, Inc
Client Address:	9888 Kent Street Elk Grove, CA 95624
Sampled By:	Pacific EcoRisk
Phone:	(916) 714-1802
FAX:	(916) 714-1804
Project Manager:	Michael Bryan
Project Name:	106 Placer SMD 1
PER Project Number:	17155

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container Number	Container Type	REQUESTED ANALYSIS: Total Aluminum	Total Hardness (Ca + Mg Calculation)
1	LW-Al-Tot-0-T0	20-Jul-10	1755	FW	1	500mL HDPE HNO3 Pres.	X	X
2	LW-Al-Tot-82-T0	20-Jul-10	1756	FW	1	500mL HDPE HNO3 Pres.	X	
3	LW-Al-Tot-118-T0	20-Jul-10	1757	FW	1	500mL HDPE HNO3 Pres.	X	
4	LW-Al-Tot-168-T0	20-Jul-10	1758	FW	1	500mL HDPE HNO3 Pres	X	
5	LW-Al-Tot-240-T0	20-Jul-10	1759	FW	1	500mL HDPE HNO3 Pres	X	
6	LW-Al-Tot-343-T0	20-Jul-10	1800	FW	1	500mL HDPE HNO3 Pres	X	
7	LW-Al-Tot 490-T0	20-Jul-10	1801	FW	1	500mL HDPE HNO3 Pres	X	
8	LW-Al-Tot-700-T0	20-Jul-10	1802	FW	1	500mL HDPE HNO3 Pres	X	
9	LW-Al-Tot-1000-T0	20-Jul-10	1803	FW	1	500mL HDPE HNO3 Pres.	X	
10								

Correct Containers:	Yes	No		
Sample Temperature:	Ambient	Cold	Warm	
Sample Preservative:	Yes	No		
Turnaround Time:	~~STD~~ ~~15~~	Specify:	4-day	

Comments:

~~Please hold all samples until further notice~~ ~~AB~~ 7/23 Please analyze all samples on COC.

Include T0 and T48 samples in the same report (MDL format with "J" flagging)
Please send a copy of the final report to Pacific EcoRisk, Attn: Allison Briden

RELIQUINSHED BY		RECEIVED BY	
Signature:	Alison Briden	**Signature:**	S. Rutland
Print:	Alison Briden	**Print:**	S. Rutland
Organization:	PER	**Organization:**	Caltest
DATE: 7-21-10 **TIME:** 0925		**DATE:** 072110 **TIME:** 0925	
Signature:		**Signature:**	
Print:		**Print:**	
Organization:		**Organization:**	
DATE:	**TIME:**	**DATE:**	**TIME:**

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

Pacific EcoRisk
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2250 Cordelia Road, Fairfield, CA 94534
(707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Client Name:	Robertson-Bryan, Inc
Client Address:	9888 Kent Street Elk Grove, CA 95624
Sampled By:	Pacific EcoRisk
Phone:	(916) 714-1802
FAX:	(916) 714-1804
Project Manager:	Michael Bryan
Project Name:	106 Placer SMD 1
PER Project Number:	17155

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container Number	Container Type	REQUESTED ANALYSIS: DOC	TOC	TSS	TDS
1	LW-DOC-T0	20-Jul-10	2030	FW	1	250 mL amber glass	X			
2	LW-TOC-T0	20-Jul-10	2031	FW	1	3x45 mL VOA		X		
3	LW-TSS-T0	20-Jul-10	2032	FW	1	500 mL HDPE			X	
4	LW-TDS-T0	20-Jul-10	2033	FW	1	500 mL HDPE				X
5	EFF-DOC-T0	20-Jul-10	2025	FW	1	250 mL amber glass	X			
6	EFF-TOC-T0	20-Jul-10	2026	FW	1	3x45 mL VOA		X		
7	EFF-TSS-T0	20-Jul-10	2027	FW	1	500 mL HDPE			X	
8	EFF-TDS-T0	20-Jul-10	2028	FW	1	500 mL HDPE				X
9										
10										
11										
12										
13										

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Samples on this COC are not on hold.

Include T0 and T48 samples in the same report (MDL format with "J" flagging)
Please send a copy of the final report to Pacific EcoRisk, Attn: Alison Briden

RELIQUINSHED BY		**RECEIVED BY**	
Signature:		**Signature:**	
Print:	Alison Briden	**Print:**	
Organization:	PER	**Organization:**	
DATE:	7-21-10 **TIME:** 0925	**DATE:**	**TIME:**
Signature:		**Signature:**	
Print:	S. Rutland	**Print:**	
Organization:	Caltest	**Organization:**	
DATE:	07/21/10 **TIME:** 0925	**DATE:**	**TIME:**

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

Caltest ANALYTICAL LABORATORY

ENVIRONMENTAL ANALYSES

Wednesday, July 28, 2010

Mike Bryan
Robertson-Bryan, Inc.
9888 Kent Street
Elk Grove, CA 95624

RE:	Lab Order:	K070901	Collected By:	PACIFIC ECO RISK
	Project ID:	106 Placer County SMD1 (2of2)	PO/Contract #:	17155

Dear Mike Bryan.

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, July 23, 2010. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

CC: Alison Briden, Pacific EcoRisk

Enclosures

Project Manager: Todd Albertson

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(707) 258-4000 • Fax (707) 226-1001 • e-mail: info@caltestlabs.com

SAMPLE SUMMARY

Lab Order: K070901

Project ID: 106 Placer County SMD1 (2of2)

Lab ID	Sample ID	Matrix	Date Collected	Date Received
K070901001	LW-Al-Tot-0-T48	Water	7/22/2010 18:57	7/23/2010 06:54
K070901002	LW-Al-Tot-82-T48	Water	7/22/2010 18:58	7/23/2010 06:54
K070901003	LW-Al-Tot-118-T48	Water	7/22/2010 18:59	7/23/2010 06:54
K070901004	LW-Al-Tot-168-T48	Water	7/22/2010 19:00	7/23/2010 06:54
K070901005	LW-Al-Tot-240-T48	Water	7/22/2010 19:01	7/23/2010 06:54
K070901006	LW-Al-Tot-343-T48	Water	7/22/2010 19:02	7/23/2010 06:54
K070901007	LW-Al-Tot-490-T48	Water	7/22/2010 19:03	7/23/2010 06:54
K070901008	LW-Al-Tot-700-T48	Water	7/22/2010 19:04	7/23/2010 06:54
K070901009	LW-Al-Tot-1000-T48	Water	7/22/2010 19:05	7/23/2010 06:54
K070901010	EFF-Al-Tot-0-T48	Water	7/22/2010 14:50	7/23/2010 06:54
K070901011	EFF-Al-Tot-5000-T48	Water	7/22/2010 14:59	7/23/2010 06:54
K070901012	EFF-Al-Tot-288-T48	Water	7/22/2010 14:51	7/23/2010 06:54
K070901013	EFF-Al-Tot-412-T48	Water	7/22/2010 14:51	7/23/2010 06:54
K070901014	EFF-Al-Tot-588-T48	Water	7/22/2010 14:53	7/23/2010 06:54
K070901015	EFF-Al-Tot-840-T48	Water	7/22/2010 14:54	7/23/2010 06:54
K070901016	EFF-Al-Tot-1201-T48	Water	7/22/2010 14:55	7/23/2010 06:54
K070901017	EFF-Al-Tot-1715-T48	Water	7/22/2010 14:56	7/23/2010 06:54
K070901018	EFF-Al-Tot-2450-T48	Water	7/22/2010 14:57	7/23/2010 06:54
K070901019	EFF-Al-Tot-3500-T48	Water	7/22/2010 14:58	7/23/2010 06:54

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NARRATIVE

Lab Order: K070901

Project ID: 106 Placer County SMD1 (2of2)

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirely. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that all test results for wastewater and hazardous waste analyses meet all applicable NELAC requirements; all microbiology and drinking water testing meet applicable ELAP requirements, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods (SM) 18th Ed. except where noted.

Caltest collects samples in compliance with 40 CFR, EPA Methods, Cal. Title 22, and Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Filtrations performed at Caltest for dissolved metals (excluding mercury) and/or pH analysis were not performed within the 15 minute holding time as specified by 40CFR 136.3 table II

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - Non Detect - indicates analytical result has not been detected.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

E - indicates an estimated analytical result value

B - indicates the analyte has been detected in the blank associated with the sample.

NC - means not able to be calculated for RPD or Spike Recoveries.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.

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ANALYTICAL RESULTS

Lab Order: K070901

Project ID: 106 Placer County SMD1 (2of2)

Lab ID: K070901001 Date Collected: 7/22/2010 18:57 Matrix: Water

Sample ID: LW-Al-Tot-0-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	J4.9	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 18:16	MMS 5578	

Lab ID: K070901002 Date Collected: 7/22/2010 18:58 Matrix: Water

Sample ID: LW-Al-Tot-82-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	70	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 18:32	MMS 5578	

Lab ID: K070901003 Date Collected: 7/22/2010 18:59 Matrix: Water

Sample ID: LW-Al-Tot-118-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	81	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 18:37	MMS 5578	

Lab ID: K070901004 Date Collected: 7/22/2010 19:00 Matrix: Water

Sample ID: LW-Al-Tot-168-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	75	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 18:42	MMS 5578	

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ANALYTICAL RESULTS

Lab Order: K070901

Project ID 106 Placer County SMD1 (2of2)

Lab ID: K070901005 Date Collected: 7/22/2010 19:01 Matrix: Water

Sample ID: LW-Al-Tot-240-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	114	ug/L	10	3.2	2	07/24/10 00:00	MPR 9002	07/26/10 18:48	MMS 5578	

Lab ID: K070901006 Date Collected: 7/22/2010 19:02 Matrix: Water

Sample ID: LW-Al-Tot-343-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	173	ug/L	10	3.2	2	07/24/10 00:00	MPR 9002	07/26/10 18:53	MMS 5578	

Lab ID: K070901007 Date Collected: 7/22/2010 19:03 Matrix: Water

Sample ID: LW-Al-Tot-490-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	323	ug/L	10	6.4	4	07/24/10 00:00	MPR 9002	07/26/10 19:14	MMS 5578	

Lab ID: K070901008 Date Collected: 7/22/2010 19:04 Matrix: Water

Sample ID: LW-Al-Tot-700-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	503	ug/L	10	6.4	4	07/24/10 00:00	MPR 9002	07/26/10 19:19	MMS 5578	

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ENVIRONMENTAL ANALYSES

ANALYTICAL RESULTS

Lab Order: K070901

Project ID 106 Placer County SMD1 (2of2)

Lab ID: K070901009 Date Collected: 7/22/2010 19:05 Matrix: Water

Sample ID: LW-Al-Tot-1000-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	800	ug/L	10	8.0	5	07/24/10 00:00	MPR 9002	07/26/10 19:25	MMS 5578	

Lab ID: K070901010 Date Collected: 7/22/2010 14:50 Matrix: Water

Sample ID: EFF-Al-Tot-0-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	40	ug/L	10	1.6	1	07/24/10 00:00	MPR 9002	07/26/10 19:30	MMS 5578	

Lab ID: K070901011 Date Collected: 7/22/2010 14:59 Matrix: Water

Sample ID: EFF-Al-Tot-5000-T48 Date Received: 7/23/2010 06:54

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Metals by ICPMS Collision Mode, Total		**Prep Method:**	EPA 200.8			**Prep by:** UK				
		Analytical Method:	EPA 200.8					**Analyzed by:** LM		
Aluminum	5090	ug/L	100	80	50	07/24/10 00:00	MPR 9002	07/26/10 19:35	MMS 5578	

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QUALITY CONTROL DATA

Lab Order: K070901

Project ID: 106 Placer County SMD1 (2of2)

Analysis Description:	Metals by ICPMS Collision Mode, Total	QC Batch:	MPR/9002
Analysis Method:	EPA 200.8	QC Batch Method:	EPA 200.8

METHOD BLANK: 342954

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Aluminum	J2.2	10	1.6	ug/L	

LABORATORY CONTROL SAMPLE: 342955

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	40	42	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 342956 342957

Parameter	Units	K070901001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Aluminum	ug/L	4.9	40	46	48	102	108	85-115	5.3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 342958 342959

Parameter	Units	K070820009 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Aluminum	ug/L	5.3	40	44	47	98	104	85-115	5.6	20	

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QUALITY CONTROL DATA QUALIFIERS

Lab Order: K070901

Project ID: 106 Placer County SMD1 (2of2)

QUALITY CONTROL PARAMETER QUALIFIERS

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

NC - means not able to be calculated for RPD or Spike Recoveries.

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab Order: K070901

Project ID: 106 Placer County SMD1 (2of2)

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
K070901001	**LW-Al-Tot-0-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901002	**LW-Al-Tot-82-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901003	**LW-Al-Tot-118-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901004	**LW-Al-Tot-168-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901005	**LW-Al-Tot-240-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901006	**LW-Al-Tot-343-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901007	**LW-Al-Tot-490-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901008	**LW-Al-Tot-700-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901009	**LW-Al-Tot-1000-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901010	**EFF-Al-Tot-0-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578
K070901011	**EFF-Al-Tot-5000-T48**	EPA 200.8	MPR/9002	EPA 200.8	MMS/5578

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Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Road, Fairfield, CA 94534
(707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Client Name:	Robertson-Bryan, Inc
Client Address:	9888 Kent Street Elk Grove, CA 95624
Sampled By:	Pacific EcoRisk
Phone:	(916) 714-1802
FAX:	(916) 714-1804
Project Manager:	Michael Bryan
Project Name:	106 Placer SMD 1
PER Project Number:	17155

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container Number	Container Type	REQUESTED ANALYSIS: Total Aluminum	
1	EFF-Al-Tot--0-T48	22-Jul-10	1450	FW	1	500mL HDPE HNO3 Pres.	X	
2	~~EFF-Al-Tot-288-T48~~	~~22-Jul-10~~	1451	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
3	~~EFF-Al-Tot-412-T48~~	~~22-Jul-10~~	1452	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
4	~~EFF-Al-Tot-588-T48~~	~~22-Jul-10~~	1453	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
5	~~EFF-Al-Tot-840-T48~~	~~22-Jul-10~~	1454	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
6	~~EFF-Al-Tot-1201-T48~~	~~22-Jul-10~~	1455	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
7	~~EFF-Al-Tot-1715-T48~~	~~22-Jul-10~~	1456	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
8	~~EFF-Al-Tot-2450-T48~~	~~22-Jul-10~~	1457	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
9	~~EFF-Al-Tot-3500-T48~~	~~22-Jul-10~~	1458	~~FW~~	~~1~~	~~500mL HDPE HNO3 Pres.~~	~~X~~	~~TB~~
10	EFF-Al-Tot--5000-T48	22-Jul-10	1459	FW	1	500mL HDPE HNO3 Pres.	X	

Correct Containers:	Yes	No		
Sample Temperature:	Ambient	Cold	Warm	
Sample Preservative:	Yes	No		
Turnaround Time:	~~STD~~ ~~TB~~	Specify:	4-day	

Comments:

~~Please hold all samples until further notice~~ AS

Include T0 and T48 samples in the same report (MDL format with "J" flagging)
Please send a copy of the final report to Pacific EcoRisk, Attn: Alison Briden

Please analyze the samples that are not lined out on this COC. 7/23

RELIQUINSHED BY			
Signature:	[signature]	Signature:	
Print:	Sara Mykytyn	Print:	
Organization:	PER	Organization:	
DATE: 7/23/10 TIME: 0630		DATE:	TIME:

RECEIVED BY			
Signature:	[signature]	Signature:	
Print:	GLEN TARLE	Print:	
Organization:	CALTEST	Organization:	
DATE: 7/23/10 TIME: 0630		DATE:	TIME:

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Road,Fairfield, CA 94534
(707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Client Name:	Robertson-Bryan, Inc
Client Address:	9888 Kent Street Elk Grove, CA 95624
Sampled By:	Pacific EcoRisk
Phone:	(916) 714-1802
FAX:	(916) 714-1804
Project Manager:	Michael Bryan
Project Name:	106 Placer SMD 1
PER Project Number:	17155

REQUESTED ANALYSIS

	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container Number	Container Type	Total Aluminum										
1	LW-Al-Tot-0-T48	22-Jul-10	1857	FW	1	500mL HDPE HNO3 Pres	X										
2	LW-Al-Tot-82-T48	22-Jul-10	1858	FW	1	500mL HDPE HNO3 Pres.	X										
3	LW-Al-Tot-118-T48	22-Jul-10	1859	FW	1	500mL HDPE HNO3 Pres	X										
4	LW-Al-Tot-168-T48	22-Jul-10	1900	FW	1	500mL HDPE HNO3 Pres	X										
5	LW-Al-Tot-240-T48	22-Jul-10	1901	FW	1	500mL HDPE HNO3 Pres	X										
6	LW-Al-Tot-343-T48	22-Jul-10	1902	FW	1	500mL HDPE HNO3 Pres	X										
7	LW-Al-Tot 490-T48	22-Jul-10	1903	FW	1	500mL HDPE HNO3 Pres	X										
8	LW-Al-Tot-700-T48	22-Jul-10	1904	FW	1	500mL HDPE HNO3 Pres	X										
9	LW-Al-Tot-1000-T48	22-Jul-10	1905	FW	1	500mL HDPE HNO3 Pres	X										
10																	

Correct Containers:	Yes	No		
Sample Temperature:	Ambient	Cold	Warm	
Sample Preservative:	Yes	No		
Turnaround Time:	~~STD~~ 10	Specify:	4-day	

Comments:

~~Please hold all samples until further notice~~ 10 Please analyze all samples on COC.

Include T0 and T48 samples in the same report (MDL format with "J" flagging)
Please send a copy of the final report to Pacific EcoRisk, Attn: Alison Briden

RELIQUINSHED BY

Signature:	S Mykytyn	**Signature:**	
Print:	Sara Mykytyn	**Print:**	
Organization:	PER	**Organization:**	
DATE: 7/23/10 **TIME:** 0630		**DATE:**	**TIME:**

RECEIVED BY

Signature:		**Signature:**	
Print:	GLEN INNIS	**Print:**	
Organization:	CALTEST	**Organization:**	
DATE: 7/23/10 **TIME:** 0630		**DATE:**	**TIME:**

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

ATTACHMENT B

Placer County Comments on the Tentative Waste Discharge Requirements and Cease and Desist Order for Placer County Department of Facility Services Placer County SMD 1 Wastewater Treatment Plant

ATTACHMENT B

Due to the continued hearing, this file has been created to show the County's original "Attachment A" comments on the Tentative Orders submitted on April 15, 2010, and which of these original comments have: 1) been addressed by Board staff in the July Tentative Orders, 2) been replaced by an August 9, 2010 comment, 3) not been address by Board staff and, therefore, remain applicable. This is indicated in the file below by: 1) [**Comment has been Addressed in Revised Tentative Order**], 2) **[Comment Replaced by an August 9, 2010 Comment], or 3) [Comment Remains Applicable].**

For any April 15, 2010 comment that has been addressed by the July 2010 revised Tentative Orders (as defined herein), The County reserves the right to comment further should the manner in which the comment was addressed in the July 2010 Tentative Orders change again, prior to Board adoption of the Orders.

ATTACHMENT A

PLACER COUNTY COMMENTS
ON
TENTATIVE
WASTE DISCHARGE REQUIREMENTS AND
CEASE AND DESIST ORDER
FOR
PLACER COUNTY DEPARTMENT OF FACILITY SERVICES
PLACER COUNTY SEWER MAINTENANCE DISTRICT 1
WASTEWATER TREATMENT PLANT
PLACER COUNTY

Submitted April 15, 2010

I. GENERAL COMMENTS

Request for Capacity Expansion **[Comment Remains Applicable]**

As part of the *Report of Waste Discharge* (ROWD), the County requested an increase in permitted average dry weather discharge capacity from 2.18 million gallons per day (MGD) to 2.7 MGD for the SMD 1 WWTP, contingent upon completion of the WWTP upgrade and expansion project. Along with the request in the ROWD, the County submitted the *Antidegradation Analysis for the Placer County SMD 1 Wastewater Treatment Plant* (Antidegradation Analysis) in accordance with the guidance provided in the State Water Resources Control Board's APU 90-004. This request was addressed via the "Expansion Option" accompanying the Tentative Order, as an option to be presented to and decided by the Regional Water Board. The County reiterates this request for the reasons described below.

As stated at the April 2009 Regional Water Board meeting and in subsequent semi-annual progress reports, the County has continued to explore the possibility of connecting to the City of Lincoln's Wastewater Treatment and Reclamation Facility (WTRF) in an effort to regionalize wastewater treatment and disposal (see Attachment B for additional details regarding the County's past efforts towards regionalization). The estimated costs for connecting to the City of Lincoln WTRF far exceed estimated costs for the proposed SMD 1 WWTP upgrade and expansion. The difference is in excess of $41 million, even if $14 million in currently authorized federal grants is appropriated. These Congressional appropriations are discretionary and have been slow to materialize. An additional $40 million in debt service for the approximately 4,600 connections in the SMD 1 service area is simply not economically feasible, which is why service area residents support upgrading and expanding the WWTP over regionalization.

It is now clear that the regional sewer and treatment project will take at least two additional years to complete beyond the SMD 1 WWTP upgrade even if the federal funds were available at this time. This is due, in part, to delays associated with the slow pace of acquiring federal funding.

In addition, regionalization will take longer to design, complete environmental documentation, and construct due to the project complexities, higher potential for unknowns, and length of pipe required. The difficulty of regionalization is further compounded by the fact that multiple agencies must participate or the SMD 1 cost share will be even greater. Negotiations of this highly complex issue between the County, the City of Auburn, and the City of Lincoln are ongoing, but there is no resolution at this time.

Further, the County fails to see how regionalization creates a greater benefit to the people of the State as compared to upgrading the current WWTP with a moderate increase in permitted discharge capacity. As indicated previously, any expansion to the SMD 1 WWTP would occur only in conjunction with an upgrade of the facility. Once upgraded, the quality of effluent from the WWTP would be equivalent to or better than the quality of effluent discharged from the City of Lincoln's WTRF. The only difference would be the point of discharge.

Because of the considerably higher costs associated with connecting to the City of Lincoln WTRF, and because additional State or federal grant funds have not been made available despite the County's best efforts, SMD 1 and its ratepayers cannot afford the cost of regionalization, thereby making regionalization infeasible at this time.

The WWTP upgrades proposed are necessary to achieve compliance with current and anticipated future permit limitations. For economic and logistical reasons, and the physical constraints of the size of the WWTP site, capacity expansion for the future needs to be addressed concurrent with the WWTP upgrades. Attempting to address only upgrades now and expanded capacity later would result in two separate projects that would ignore economy of scale and sound engineering practices, thereby resulting in a much more costly and disruptive set of projects compared to addressing both in a single upgrade/expansion project. Furthermore, the size of the WWTP site is limited such that it would not be feasible to simply "tack on" additional facilities later. The County would be hesitant to expend valuable resources on upgrading the SMD 1 WWTP if the facility is not expanded to provide sufficient capacity to address future needs. Without the improvements, SMD 1 will be unable to comply with final effluent limitations in the Tentative Order that become effective immediately for some constituents and in 2015 for others.

In lieu of denying the County's request for an increase of permitted capacity, we request that the Tentative Order be adopted with an allowable increase in the permitted discharge capacity to 2.7 MGD contingent on completion of WWTP upgrades. By permitting the capacity increase in this manner, the Regional Water Board would not be precluding the possibility of regionalization should the grant monies become available in the near future (i.e., this year). This approach is not new and is consistent with Waste Discharge Requirements for City of Roseville, Order No. R5-2008-0079.

Satisfaction of Antidegradation Policy **[Comment has been Addressed in Revised Tentative Order]**

As required to support the request for expanded permitted discharge capacity to 2.7 MGD, the County submitted the *Antidegradation Analysis for the Placer County SMD 1 Wastewater Treatment Plant* (Antidegradation Analysis) in accordance with the guidance provided in the

State Water Resources Control Board's APU 90-004. The County has concerns with the Satisfaction of Antidegradation Policy discussion in both the Tentative Order and the "Expansion Option." These concerns are described in general below. Specific requested text modifications are provided later in this attachment.

Tentative Order

The discussion of the satisfaction of the Tentative Order with the State's Antidegradation Policy (beginning on p. F-63) is incomplete, implies that the Antidegradation Analysis was not conducted consistent with State Policy and APU-90-004, and makes several generalized statements. The County is concerned that certain statements (e.g., "The Regional Water Board does not concur with the Discharger's Antidegradation Analysis" [p. F-63]) will preclude the Regional Water Board's ability to grant expanded capacity in the future via the Reopener Provision – which will be necessary should the "Expansion Option" be rejected. Furthermore, the Tentative Order concludes that regionalization is a feasible alternative to expanded treatment capacity without regard to the cost to implement regionalization, and even states that future per capita costs for wastewater treatment and disposal will be less with regionalization without citing any supporting economic analysis. Current financial projections performed by the County do not support the finding that there is a future economic benefit of regionalization. As shown in Table F-10 (taken from the Antidegradation Analysis) both the capital cost and the ongoing operational cost of regionalization are higher than the proposed upgrade and expansion cost. The discussion relies, in part, on findings in Resolution No. R5-2009-0028 in Support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants, but the findings presented in the Tentative Order based on this resolution are sometimes presented out of context.

Text modifications are needed to the Satisfaction of Antidegradation Policy discussion in the Tentative Order to accurately: (1) reflect the findings of the Antidegradation Analysis versus the additional information considered by the Regional Water Board, (2) cite findings in Resolution No. R5-2009-0028, and (3) define the Regional Water Board's basis for denying expanded capacity. Provided later in this attachment is revised text for this section for your consideration. Some of the revised text is based on the "Expansion Option" text. The County does not agree that all of that text is optional, as some of it contains facts and findings regarding the Antidegradation Analysis (e.g., "The Regional Water Board concurs with this scientific approach.") that will be particularly relevant if the Order must be reopened in the future to allow for expanded discharge capacity. As such, key facts and findings regarding the Antidegradation Analysis need to be included in the Tentative Order.

Expansion Option

While the Satisfaction of Antidegradation Policy discussion in the "Expansion Option" is significantly expanded relative to the Tentative Order, the County still has concerns with certain unsupported statements (described above), such as "costs associated with meeting future regulatory requirements and system upgrades…will ultimately reduce the per capita costs of wastewater treatment and disposal," as well as an incomplete description of Antidegradation Analysis versus Regional Water Board findings and Resolution No. R5-2009-0028 findings. Provided later in this document is revised text for this section for your consideration.

Prescription of Operations and Treatment **[Comment Remains Applicable]**

The County requests that all requirements in the Tentative Order that prescribe the method of treatment necessary to comply with the effluent and receiving water limitations be deleted, or modified as recommended below. None of these requirements are necessary to assure compliance with effluent limitations and, as written, they will greatly increase capital and operating costs. Further, the California Water Code specifically states that the Regional Water Board shall not specify the manner of compliance, including prescribing the treatment process. (Wat. Code §13360(a).)

The Tentative Order contains an operation specification (p. 25) that states, "Wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH; formerly the Department of Health Services) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent." This specification defines treatment methods related to Title 22, division, 4, chapter 3, which is a prescription of treatment that is inconsistent with Water Code section 13360(a) and the Tentative Order's Fact Sheet (p. F-48), which states: "The method of treatment is not prescribed by this Order." The County requests the following changes in wording of this specification to make clear that the SMD1 WWTP is to achieve compliance with effluent limitations based on the quality of effluent produced under Title 22 requirements, not the Title 22 requirements themselves, which the Fact Sheet (p. F-47) acknowledges are not directly applicable to surface waters. This wording is the same as that contained in Order No. R5-2008-0173 for the EID's Deer Creek Wastewater Treatment Plant. The requested edit also applies to the top of p. 30, item "b" on p. F-82, and item "c" on p. F-85.

> b. Wastewater shall be ~~oxidized, coagulated, filtered, and adequately disinfected~~ treated to achieve effluent limitations contained in Section IV.A.1 of this Order ~~pursuant to~~ that are consistent with the Department of Public Health (DPH; formerly the Department of Health Services) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent, in accordance with the compliance schedule in Section VI.C.7.b, below.

The WWTP upgrades proposed by SMD 1 will provide an equivalent level of treatment, which will be demonstrated through achievement of the equivalent to tertiary treatment-based biochemical oxygen demand (BOD), total suspended solids (TSS), and total coliform limitations and the operation specification for turbidity.

In addition to prescriptive treatment process requirements, the Tentative Order includes extensive operation-related monitoring requirements (e.g., Expansion Option: Page 3, Page 20 Paragraph 7, and Table E-10). In particular, the Expansion Option contains selected paragraphs from California Title 22 Water Recycling Criteria and the National Water Research Institute (NWRI) Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse. The purpose of the NWRI Guidelines is to provide guidance for designing and operating ultraviolet (UV) disinfection systems rather than for permitting. The Tentative Order Expansion Option goes so far as to specify the minimum UV dose and transmittance, which are based on guidelines that assume treatment of a lower quality water than will reach the UV system at the SMD 1 WWTP. Further, the power-related specifications presume that the County will be installing a certain type of UV disinfection system and prevent the County from realizing the benefit from installing a

UV system that requires less power to operate to achieve the same level of treatment. The UV disinfection operations requirements will further compound the complexity of the reporting, require more power be used than necessary to achieve disinfection requirements (increasing the carbon footprint of the WWTP operation), increase operating costs, and are not necessary to protect water quality. In some cases, the requirements duplicate other requirements, leading to future misunderstandings. The level of effort required to address these issues at the enforcement level (after Tentative Order adoption) will add other significant costs to the County without benefit to water quality. Consequently, the County requests that all requirements that relate to how the UV disinfection system is operated and maintained be deleted from the Order.

Effluent Limitations for Aluminum [**Comment Replaced by August 9, 2010 Comment**]

The U.S. EPA developed National Ambient Water Quality Criteria (NAWQC) for aluminum for protection of freshwater aquatic life (EPA 440/5-86-008; August 1988). The recommended 4-day average (chronic) and 1-hour average (acute) criteria are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0. As stated on p. 6 of the aluminum NAWQC document, "Thus, the Final Chronic Value for aluminum is equal to the Criterion Maximum Concentration of 748 µg/L for fresh water at a pH between 6.5 and 9.0 (Table 3). Data in Table 6 concerning the toxicity of aluminum to brook trout and striped bass show that the Final Chronic Value should be lowered to 87 µg/L to protect these two important species." The U.S. EPA lowered its initially derived 748 µg/L Final Chronic Value to 87 µg/L (see Table 3, p. 22) based on two tests, one with brook trout and one with striped bass, at low hardness (10-12 mg/L as $CaCO_3$) and low pH (6.5-6.6). The 87 µg/L value is considered to be necessary for protecting waters concurrently experiencing such low hardness and pH. For waters not experiencing concurrent total hardness of 10-12 mg/L (as $CaCO_3$) and pH of 6.5-6.6, the U.S. EPA indicates that the 750 µg/L criterion (rounded to two significant figures from its originally derived 748 µg/L Final Chronic Value) is protective of aquatic life.

Because the lowest measured upstream receiving water hardness is 20 mg/L (as $CaCO_3$) and the lowest measured effluent hardness is 141 mg/L (as $CaCO_3$), downstream receiving water hardness would always be above 20 mg/L (as $CaCO_3$) and substantially greater than the 10-12 mg/L (as $CaCO_3$) hardness range where the 87 µg/L chronic criterion is applicable. In fact, under conditions where the downstream flow in the receiving water is dominated by the discharge and, thus, downstream receiving water aluminum levels would be predominantly affected by the discharge, downstream total hardness would be on the order of 80 mg/L (as $CaCO_3$) or greater. Thus, 750 µg/L should be determined to be the chronic aquatic life criterion applicable to the receiving water at and downstream of the discharge location.

The Fact Sheet (p. F-37) notes that the final effluent hardness is affected by the addition of magnesium hydroxide to the primary clarifier to provide alkalinity for nitrification. The Fact Sheet also notes that the use of magnesium hydroxide may be discontinued following the planned WWTP upgrade, which will reduce the hardness of the final effluent and downstream receiving water hardness relative to current levels – though it does not specify the resulting levels and whether those would be in the range at which the 87 µg/L or 750 µg/L chronic criterion would be applicable. The County contends that the determination of the applicable chronic aluminum criterion should be based on the hardness of the current final effluent

produced by the WWTP, as characterized in the data set submitted as part of the ROWD (i.e., lowest measured effluent hardness is 141 mg/L as $CaCO_3$), and not based on speculation that effluent hardness may be low enough in the future to make the 87 µg/L chronic criterion applicable. Furthermore, once the WWTP upgrade is complete, effluent hardness will likely never be sufficiently low to make the 87 µg/L chronic aluminum criterion applicable.

The Monitoring and Reporting Program requires that hardness be monitored 1/month, thus any future changes in effluent hardness will be closely tracked. The Tentative Order contains a Reopener Provision that states, "Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including…When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance." A major future change in effluent hardness tied to reducing the use of magnesium hydroxide would constitute new information that is unknown and, thus, not available at this time.

Concentrations of aluminum in the effluent do not exceed the currently applicable chronic aquatic life criterion of 750 µg/L, nor the applicable drinking water MCL of 200 µg/L. As such, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the applicable criteria for protection of freshwater aquatic life or human health. Thus, the County requests that effluent limitations for aluminum be removed from the Tentative Order. Specific sections from which aluminum should be removed include: p. 8 (M. Stringency of Requirements for Individual Pollutants), p. 12 (Table 6. Final Effluent Limitations), p. E-5 (Table E-3, Effluent Monitoring), and p. H-1 (Attachment H-Calculation of Water Quality-Based Effluent Limitations). In addition, Attachment G (Summary of Reasonable Potential Analysis) should be changed to show the CCC for aluminum as 750 µg/L and "Reasonable Potential" column changed to "No." Additional edits are described later in this attachment.

Addition of New Effluent Limitation for Arsenic [**Comment Replaced by August 9, 2010 Comment**]

The Tentative Order identifies the lowest applicable water quality objective for arsenic as the primary maximum contaminant level (MCL) of 10 µg/L, implemented as an annual average basis. The Tentative Order (p. F-40) cites the maximum annual average effluent concentration at the SMD 1 WWTP for arsenic as 21.5 µg/L and uses this value for the reasonable potential analysis and determination that an arsenic effluent limitation is needed. The County disagrees with the finding that the maximum annual average effluent concentration at the SMD 1 WWTP for arsenic is 21.5 µg/L, and that an effluent limitation for arsenic is needed.

First, the 21.5 µg/L value cited is a concentration reported for a single measurement on November 8, 2007, not the average of multiple arsenic measurements over a 12-month (i.e., annual) period. Figure 1 below shows that, with the exception of this 21.5 µg/L value, measured arsenic concentrations in the effluent have never been above 0.825 µg/L (n = 20) over the period for which data are available (March 2002-February 2003 and October 2005 – January 2010). If the 21.5 µg/L value was averaged with only two other measurements, the result would be an average concentration less than 10 µg/L. Thus, this 21.5 µg/L value is not representative of typical arsenic concentrations in the SMD 1 WWTP effluent, nor is it representative of an annual average concentration. This is further evident when considering the maximum effluent

concentration (MEC) of arsenic in effluents of other Central Valley region wastewater treatment plants. Table 1 summarizes the MECs reported in the most recently adopted NPDES permits for the identified facilities, which shows that typical MECs have been below the arsenic MCL of 10 µg/L, and in fact have been below 4 µg/L.

Table 1. Other Central Valley Region Discharger Arsenic Data

Discharger	Arsenic MEC (ug/L)
EID-Deer Creek	0.39
EID-El Dorado Hills	1.9
Roseville-Dry Creek	0.8
Roseville-Pleasant Grove	0.7
Vacaville-Easterly	3.8

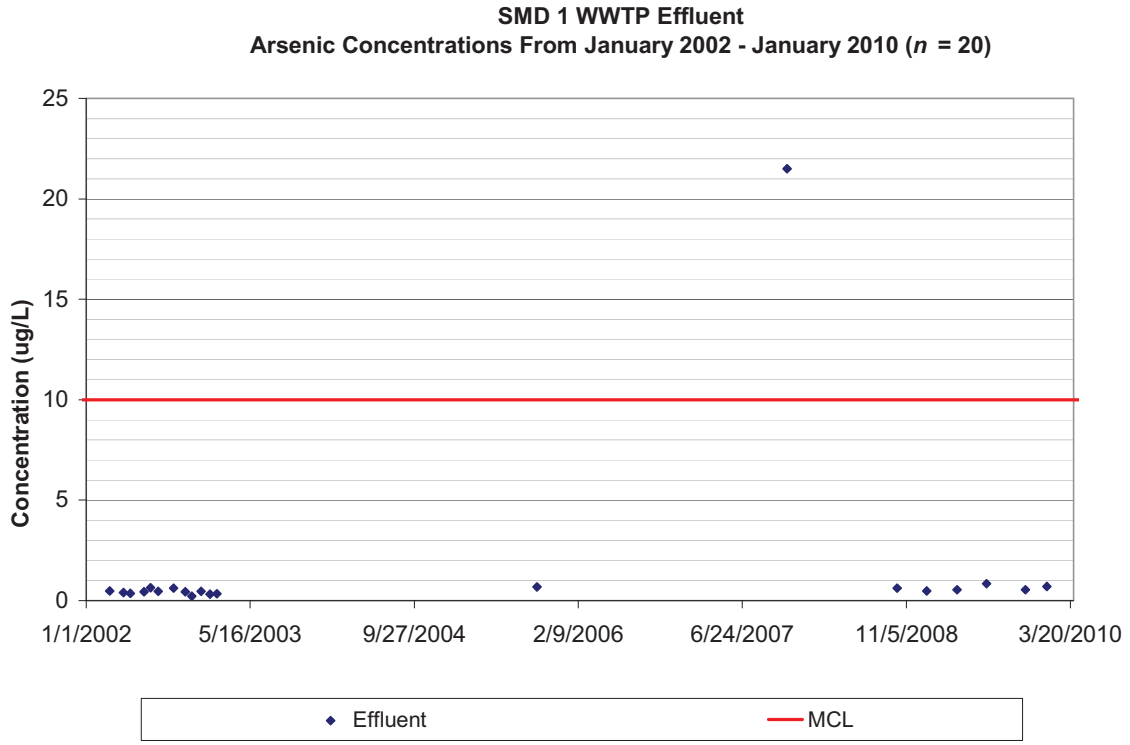

Figure 1. SMD 1 WWTP Effluent Arsenic Concentrations

As part of conducting reasonable potential analyses, the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also referred to as the Statewide Implementation Plan or SIP) (Step #7 on p. 6) states the Regional Water Board may "*Review other information available to determine if a water quality-based effluent limitation is required, notwithstanding the above analysis in Steps 1 through 6, to protect beneficial uses. Information that may be used to aid in determining if a water quality-based effluent limitation is required includes: the facility type, the discharge type, solids loading*

analysis, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue residue data, water quality and beneficial uses of the receiving water, CWA 303(d) listing for the pollutant, the presence of endangered or threatened species or critical habitat, and other information." The County believes the Regional Water Board can consider the above information as part of "other information" needed to properly determine whether effluent limitations for arsenic are needed in the Tentative Order and, based on this other information, can conclude that an arsenic effluent limitation is not needed because reasonable potential for arsenic does not exist. The County requests that the arsenic effluent limitation be removed.

Specific sections from which arsenic should be removed include: p. 8 (M. Stringency of Requirements for Individual Pollutants), p. 13 (Arsenic Effluent Limitation), and p. E-5 (Table E-3, Effluent Monitoring). In addition, Attachment G (Summary of Reasonable Potential Analysis) should be changed to show the MEC for arsenic as "<10 µg/L" with footnote #4 changed to state: "The individual non-averaged MEC for arsenic was 21.5 µg/L. However, all other effluent arsenic concentrations (n = 19) were less than 0.825 µg/L. Therefore, there is no reasonable potential for the annual average arsenic concentration in the effluent to cause exceedance of the MCL." Also, the "Reasonable Potential" column should be changed to "No."

Addition of New Effluent Limitations for Copper and Lead **[Comment Remains Applicable]**

As discussed in the Report of Waste Discharge (ROWD), the 21.9 µg/L and 25.2 µg/L values reported for copper and lead, respectively, are outliers recorded on the same effluent sample by a laboratory not typically used by the County for metals analysis, and are not representative of effluent levels for these constituents. Based on a review of available effluent data for the period January 2002 to January 2010, and excluding the outliers, the maximum copper concentration was 10.1 µg/L and the remaining detected concentrations ranged from 0.88 to 5.2 µg/L (n = 57), as shown in Figure 2. Based on available data and excluding outliers, the maximum effluent lead concentration was 1.8 µg/L (n = 57), as shown in Figure 3 and Figure 4.

It is further evident that the 25.2 µg/L value for lead is not representative when compared to the MEC of lead for other Central Valley region wastewater effluents. Table 2 summarizes the MECs reported in the most recently adopted NPDES permits for the identified facilities, which shows that MECs have been below 1 µg/L.

Table 2 Other Central Valley Region Discharger Lead Data

Discharger	Lead MEC (ug/L)
EID-Deer Creek	0.27
EID-El Dorado Hills	0.64
Roseville-Dry Creek	0.97
Roseville-Pleasant Grove	0.42
Vacaville-Easterly	0.85
Placerville-Hangtown Creek	0.45

Thus, the County requests that the non-representative values – the 21.9 µg/L and 25.2 µg/L values reported for copper and lead, respectively, be excluded from the data set used for reasonable potential analysis. Again, the SIP allows the Regional Water Board to consider additional information as part of conducting reasonable potential analyses (see Step #7, p. 6 of the SIP). Using the next highest measured values of 10.1 µg/L and 1.24 µg/L for copper and lead, respectively, the MEC is less than the lowest applicable water quality criterion (C), thus, the effluent does not exhibit reasonable potential for copper or lead. The County requests that the effluent limitations for copper and lead be removed from the Tentative Order. Specific sections from which copper and lead should be removed include: p. 8 (M. Stringency of Requirements for Individual Pollutants), p. 12 (Table 6. Final Effluent Limitations), p. E-5 (Table E-3, Effluent Monitoring), and p. H-1 (Attachment H-Calculation of Water Quality-Based Effluent Limitations). In addition, Attachment G (Summary of Reasonable Potential Analysis) should be changed to show the MEC for copper as 10.1 µg/L and for lead as 1.8 µg/L. Also, the "Reasonable Potential" column should be changed to "No."

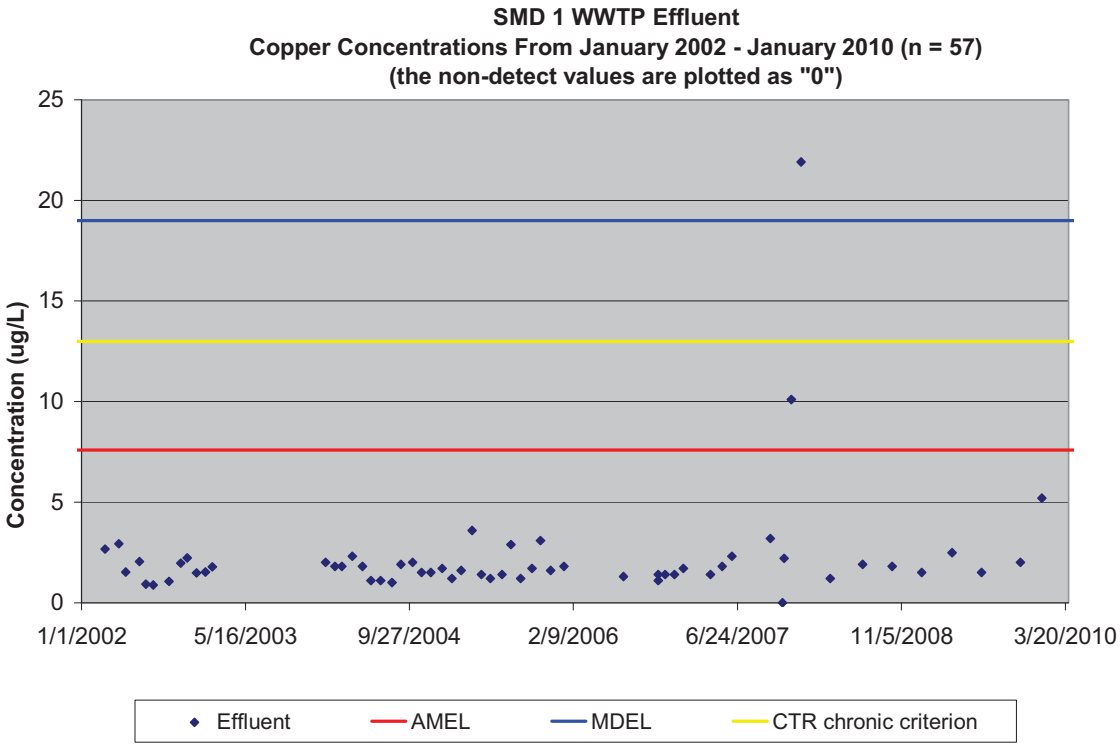

Figure 2. SMD 1 WWTP Effluent Copper Concentrations

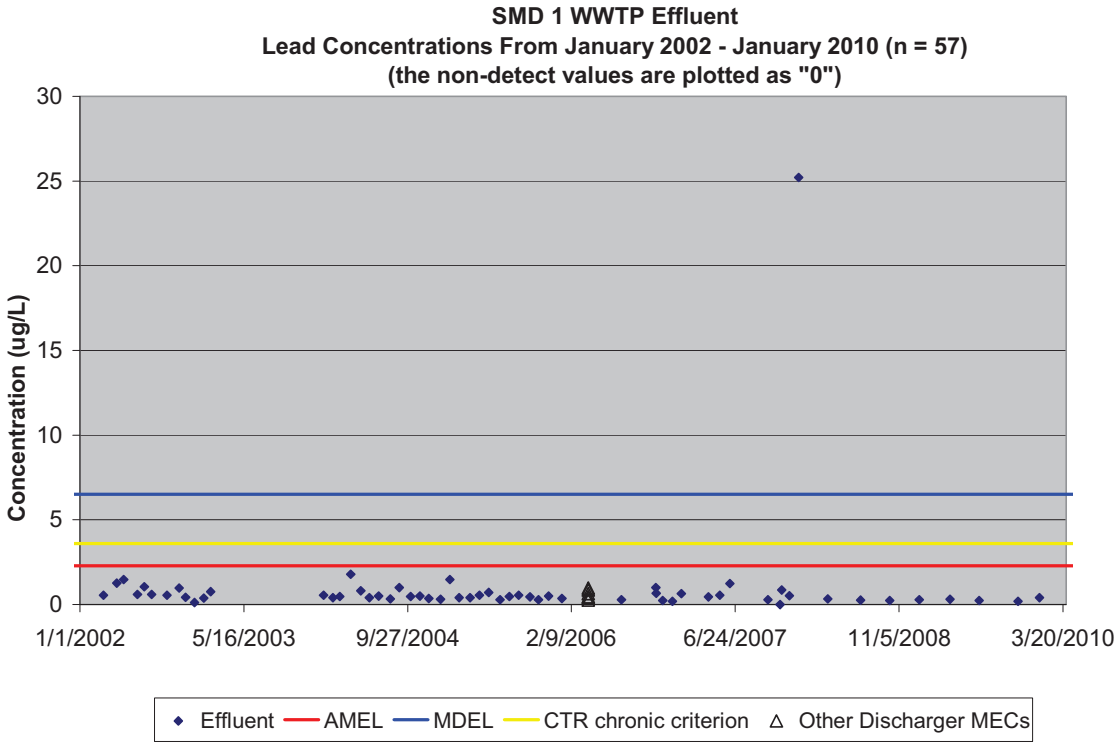

Figure 3. SMD 1 WWTP Effluent Lead Concentrations.

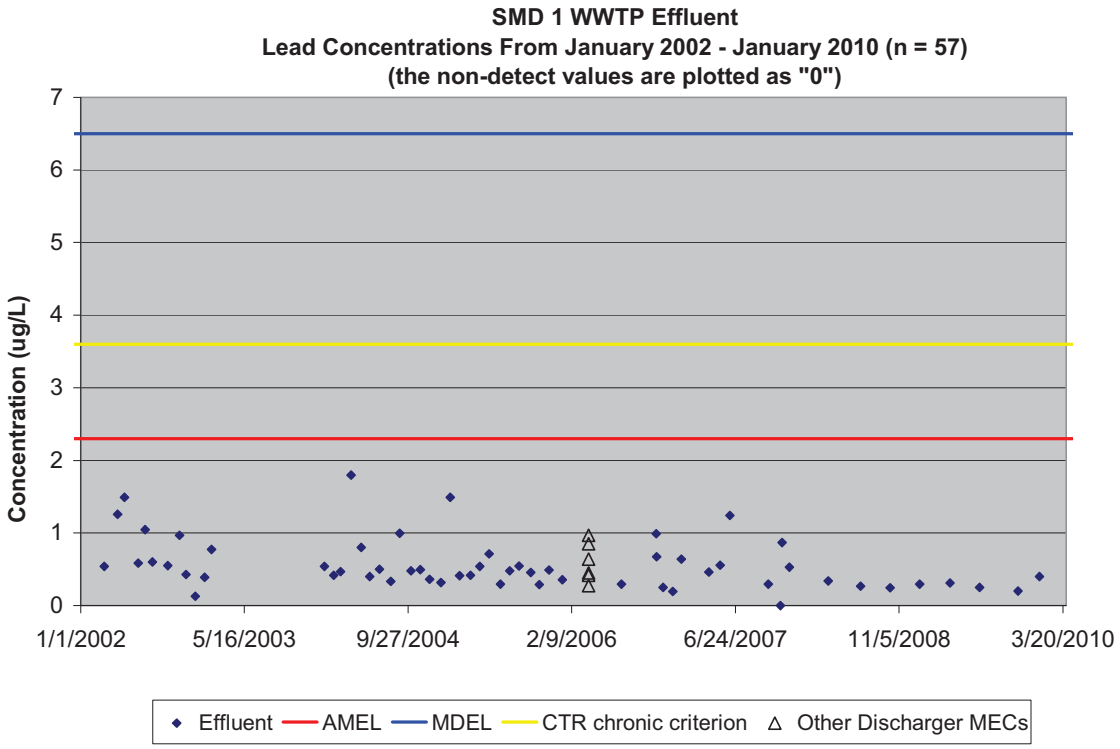

Figure 4. SMD 1 WWTP Effluent Lead Concentrations – zoomed in scale.

Compliance Schedules for BOD and TSS [**Comment Replaced by August 9, 2001 Comment, and expanded to address total coliform, Title 22 or equivalent operational requirements, and ammonia]**

The State's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Resolution 2008-0025) (Compliance Schedule Policy) allows for in-permit compliance schedules where there is a newly interpreted water quality objective or criterion in a water quality standard. (Compliance Schedule Policy at p. 3.) A "newly interpreted water quality objective or criterion in a water quality standard" means a narrative water quality objective or criterion that, when interpreted during NPDES permit development (using appropriate scientific information and consistent with state and federal law) to determine the permit limitations necessary to implement the objective, results in a numeric permit limitation more stringent than the limitation in the prior NPDES permit issued to the discharger. Pursuant to the Compliance Schedule Policy, the Tentative Order should include in-permit compliance schedules for biochemical oxygen demand (BOD) and total suspended solids (TSS), to the extent such requirements apply to discharges when influent flow exceeds 3.5 MGD and when the 7-day median temperature of the receiving water is less than 60°F. The new, more stringent water quality-based effluent limitations for BOD and TSS are derived from the narrative toxicity objective (see p. F-48) (and are more stringent than the federal Clean Water Act technology-based requirements for secondary treatment).

The current NPDES permit contains a set of effluent limitations for total coliform, turbidity, BOD and TSS when influent flow is less than 3.5 MGD based on the equivalent of tertiary treatment requirement. When flow is greater than 3.5 MGD and temperature is less than 60ºF as a 7-day median, the current NPDES permit contains a less stringent effluent limitation for total coliform of 2.2 MPN/100 ml as a 30-day median as recommended previously by Department of Public Health (DPH). To accommodate the discharge of commingled tertiary/secondary wastewater, the current NPDES permit also contains effluent limitations for BOD, TSS, and turbidity that are less stringent than the equivalent of tertiary treatment-based limitations for these parameters.

The Tentative Order requires the equivalent of tertiary treatment, regardless of influent flow rate. The Tentative Order (p. F-50) states, "A discharge in accordance with the DPH recommendation may not protect contact recreation, food crop irrigation, and will not protect the beneficial uses of domestic and municipal supply during periods when the receiving water temperature is less than 60°F and treatment plant effluent flows exceed 3.5 MGD." Thus, the Regional Water Board is making the finding that a more stringent treatment requirement, which in turn means more stringent water quality-based effluent limitations for total coliform, BOD, and TSS and a more stringent operation specification for turbidity, are necessary to protect beneficial uses. BOD and TSS levels provide an indication of treatment performance, just as total coliform and turbidity levels do. Compliance schedules for total coliform and turbidity, which have more stringent limitations/specifications due to the equivalent of tertiary treatment requirement, have already been included in the Tentative Order.

Because the Tentative Order's BOD and TSS limitations are more restrictive than those in the current NPDES permit, reflecting a new interpretation of the narrative toxicity objective, and because BOD and TSS have not been included in a previous enforcement order, the County requests that the Regional Water Board provide in-permit compliance schedules and interim limitations for BOD and TSS, consistent with the approach for total coliform and turbidity.

II. CEASE AND DESIST ORDER

p. 1, Item 1, Facility Description. [**Comment has been Addressed in Revised Tentative Order**] The County requests the following changes to the facility description to more accurately characterize the WWTP capacity:

> "1. On 23 June 2005, the Central Valley Water Board adopted Waste Discharge Requirements (WDRs) Order No. R5-2005-0074, and Cease and Desist Order (CDO) No. R5-2005-0075 prescribing waste discharge requirements and compliance time schedules for the Placer County Department of Facility Services (hereafter Discharger) Placer County Sewer Maintenance District 1 Wastewater Treatment Plant (hereafter Facility). The Facility is designed to provide tertiary treatment for average dry weather flows of 2.18 million gallons per day (MGD) ~~and peak wet weather flows of 3.5 MGD~~ for discharges to Rock Creek, a tributary to Dry Creek, the Bear River, and the Sacramento River. The Discharger has historically had high levels of inflow and infiltration during wet weather events ~~that have resulted in flows exceeding 3.5 MGD~~. During

severe wet weather events, the Facility discharges a combination of secondary and tertiary treated wastewater."

p. 4, Items 13 and 15, Exemption from Mandatory Minimum Penalties. **[Comment Remains Applicable]** The County continues to maintain that aluminum effluent limitations in the Tentative Order are not warranted. However, if the Regional Water Board proceeds to impose the effluent limitations, the County requests that the CDO provide a time schedule for compliance with the MDEL, including protection from mandatory minimum penalties for exceeding the aluminum MDEL. The MDEL for aluminum of 151 µg/L in the Tentative Order is more stringent than the MDEL in the current NPDES permit of 160 µg/L. Compliance with the new, more stringent limitation is uncertain. The County requests the CDO be modified to provide a five year schedule for coming into compliance and specify that exceedance of the aluminum MDEL is exempt from MMPs, pursuant to Water Code. section13385(j)(3).

Item 5, Effluent Limitations for BOD and TSS. [**Comment Replaced by August 9, 2010 Comment**] As noted on p. 5 of this attachment, the County requests that the compliance schedule for these constituents be included in the permit in section IV.E. If the schedule remains in the CDO, the table describing the effluent limitations in Order No. R5-2005-0074 is missing the daily maximum limitations for BOD and TSS, which are 25 mg/l and 455 lbs/day.

III. WASTE DISCHARGE REQUIREMENTS

p. 1, Table 3, Administrative Information, Effective Date. **[Comment Remains Applicable]** The County recognizes that Board staff's standard approach regarding the effective date of Orders is 50 days after adoption at the Board hearing. Because of monitoring obligations in the current permit for PCBs (for which this facility no longer has reasonable potential), compliance schedules, and related considerations, the County requests that this Order become effective as soon after adoption as possible, which we understand to be 10 days following permit adoption by the Board.

p. 4, A. Background. [**Comment has been Addressed in Revised Tentative Order**] The following sentence in this finding is incorrect. The County applied for discharge up to 2.7 MGD average dry weather flow (ADWF). The Tentative Order restricts the discharge to 2.18 MGD ADWF for reasons stated later in the Fact Sheet. The County requests the stated correction to accurately reflect the County's application for a renewed NPDES permit.

"The Discharger submitted a Report of Waste Discharge, dated 5 October 2009, and applied for a NPDES permit renewal to discharge up to ~~2.18~~ 2.7 MGD of treated wastewater from the Placer County Sewer Maintenance District 1 Wastewater Treatment Plant, hereinafter Facility."

p. 4, B. Facility Description (and p. F-4, item A and F-74, item e). [**Comment has been Addressed in Revised Tentative Order**] The County requests the following changes to the facility description to more accurately characterize the treatment plant capacity:

> "The Facility is designed to provide tertiary treatment for average dry weather flows of 2.18 million gallons per day (MGD) ~~and peak wet weather flows of 3.5 MGD~~. However, the Discharger has historically had high levels of inflow and infiltration (I/I) during wet weather events ~~that have resulted in flows exceeding 3.5 MGD~~. During severe wet weather events ~~when flows exceed 3.5 MGD~~, the Facility discharges a combination of secondary and tertiary treated wastewater."

The above edit also applies to p. F-4, item A (2nd paragraph) and p. F-74, item "e."

Furthermore, the County requests that the last paragraph of the Facility Description include the following language that is currently included in the "Expansion Option," as it is a statement of fact unaffected by findings in the Tentative Order regarding the granting or denial of expanded discharge capacity.

> "In October 2009, the Discharger submitted a Report of Waste Discharge that described plans to proceed with a project to upgrade the treatment process and expand the design capacity of the treatment plant to 2.7 MGD (average dry weather flow). As proposed in the Report of Waste Discharge, the upgraded and expanded Facility will include a new headworks, new primary clarifiers, new biological nutrient removal facilities, new secondary clarifiers and tertiary filters, new ultraviolet light disinfection facilities and new and renovated solids handling facilities."

p. 13, Electrical Conductivity Effluent Limitation. **[Comment Remains Applicable]** The Tentative Order includes a final effluent limitation requiring the annual average effluent electrical conductivity (EC) to not exceed 700 µmhos/cm. As acknowledged in the Tentative Order: "Based on the relatively low reported salinity, the discharge does not have the reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity." (Fact Sheet at F-54.) Despite the lack of reasonable potential, the Tentative Order proposes the final effluent limitation for EC "to limit the discharge of salinity to current levels." That is, the Tentative Order imposes a performance-based final effluent limitation for EC.

Because the SMD 1 WWTP discharge does not have reasonable potential to cause or contribute to an exceedance of applicable water quality objectives for salinity, a final effluent limitation for EC is not necessary. Indeed, the federal regulations provide that only where "…a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant, the permit *must* contain effluent limits for that pollutant." (40 C.F.R. § 12.44(d)(1)(iii), emphasis added.) Because a final effluent limitation is not necessary, the County requests the limitation for EC be removed. Specific sections from which EC should be removed include: p. 8 (M. Stringency of Requirements for Individual Pollutants), p. 12 (Table 6. Final Effluent Limitations).

p. 13, Total Ammonia Nitrogen (as N) Effluent Limitation. [**Comment has been Addressed in Revised Tentative Order**] Delete "(as N)" which is redundant. Correct typo in first sentence to add space between "exceed_15.1."

p. 22, g. Increased Flow Reopener Provision. [**Comment has been Addressed in Revised Tentative Order**] The County requests the following edit to this reopener provision. The

reopener provision should be tied directly to consistency with the State's Antidegradation Policy and not be subject solely to progress toward regionalization, particularly since regionalization appears to be an economically infeasible option for the County. The same edit is needed on p. F-76. Additional documentation of the County's regionalization efforts is provided in Attachment B.

> **g. Increased Flow**. Upon availability of additional information indicating that an increase in ~~flow~~ discharge to Rock Creek is consistent with the State's Antidegradation Policy ~~in the best interest of the people of the State and documentation of the Discharger's progress towards regionalization~~, this Order may be reopened to allow an increased discharge to Rock Creek.

p. 22, h. Dilution/Mixing Zone Study Reopener Provision. [**Comment has been Addressed in Revised Tentative Order**] Among the conditions for allowing a mixing zone, the SIP (p. 17) requires that a mixing zone shall not adversely impact biologically sensitive aquatic life resources or critical habitats, or produce undesirable or nuisance aquatic life. This Special Provision requires an evaluation of nutrient cycling as part of reconsideration of a nitrate+nitrite mixing zone. Extensive field work coupled with nutrient modeling would be necessary to address this provision's requirements. A nutrient cycling evaluation would only identify the fate of the nitrate+nitrite discharges. What would remain unknown is how the receiving waters respond, biologically, to the nitrate+nitrite discharges, and thus whether the aquatic communities are adversely affected or nuisance conditions exist. Rather than conducting a study of nutrient cycling, a more effective approach would be to conduct a biologically-based evaluation that characterizes the receiving waters' aquatic communities, which will provide information to directly determine whether aquatic communities are adversely affected or if nuisance conditions exist. Thus, the County requests the following edit to tie this Special Provision directly to the SIP requirements for mixing zones. The same edit is needed on pp. F-31 and F-76.

> **Dilution/Mixing Zone Study.** In order to allow dilution credits for the calculation of WQBELs for nitrate plus nitrite, the Discharger must submit an approved Dilution/Mixing Zone Study which meets all of the requirements of Section 1.4.2.2 of the SIP. Should the Discharger submit an approved Dilution/Mixing Zone Study that meets the requirements of Section 1.4.2.2 of the SIP, including sufficient data demonstrating that assimilative capacity is available and that granting the mixing zone would not adversely impact biologically sensitive aquatic life resources or critical habitats, or produce undesirable or nuisance aquatic life ~~evaluating the seasonality of nutrient cycling in the receiving water~~, the Regional Water Board may reopen this Order to include effluent limitations based on an appropriate dilution factor for nitrate plus nitrite.

Attachment E - Monitoring and Reporting Program (MRP)

p. E-5, Table E-3, Effluent Monitoring. [**Comment has been Addressed in Revised Tentative Order**] This table specifies 1/day monitoring for nitrate and nitrite. This monitoring frequency is excessive given that the limitation for these constituents is an AMEL. The County requests that the monitoring frequency be changed to 2/week. With this monitoring frequency, the effluent will be monitored at least eight times per month, which provides a suitable number of values from which to calculate a meaningful average. Reducing the monitoring frequency will

allow the County to save substantially on analytical costs (plus County staff time) while still providing sufficient data to monitor the discharge. The Regional Water Board has adopted other permits with monitoring frequencies for nitrate and nitrite of less than 1/day (e.g., City of Roseville, R5-2008-0077 and R5-2008-0079, City of Placerville, R5-2008-0053, City of Vacaville, R5-2008-0055).

p. E-8, V.B.7. Dilutions. **[Comment Remains Applicable]** The goals of a toxicity reduction evaluation (TRE) are dependant on site-specific factors and past bioassay results. As such, performing a full dilution series during every TRE bioassay is not warranted. For example, if the effluent toxicity is suspected of being easily degraded or seasonal, it may be advisable to perform screening bioassays with 100% effluent to determine if toxicity is present and its stability before determining whether concurrent monitoring and TIE work is advisable. Therefore, the County requests the following sentence be deleted from this section.

> ~~Chronic toxicity testing shall also be performed using the full dilution series identified in the following table for TRE monitoring.~~

p. E-10, Table E-6, Receiving Water Monitoring Requirements. **[Comment Remains Applicable]** Because the effluent total coliform limitations are substantially lower than the Basin Plan objective for fecal coliform, the discharge can never cause an exceedance of the fecal coliform objective as long as the WWTP is in compliance with effluent limitations. Therefore, the County requests that this receiving water monitoring requirement for fecal coliform be removed from Table E-6, as was done in EID's Deer Creek WWTP permit (Order No. R5-2008-0173), and recently renewed permits for the Cities of Placerville, Roseville, and Vacaville.

p. E-10, Table E-6, Receiving Water Monitoring Requirements. **[Comment Remains Applicable]** The County requests the frequency and schedule for receiving water priority pollutant monitoring be the same as that for the effluent (1/quarter (for 1 full year) during the 4th year of the permit term). The existing requirement in Table E-6 is contradictory. As written, Table E-6 indicates that receiving water priority pollutant monitoring is to be conducted 1/year; however footnote 4 to Table E-6 indicates that the monitoring is to be done concurrent with the effluent monitoring (during the 4th year of the permit term).

p. E-11, Table E-7, Receiving Water Monitoring Requirements. **[Comment Remains Applicable]** There is no reason for the additional bacteria monitoring in the receiving water specified in Table E-7, because the effluent is monitored for bacteria directly. The County requests that these additional monitoring requirements be removed from the Monitoring and Reporting Program.

p. E-12, B. Municipal Water Supply. **[Comment Remains Applicable]** This section of the Monitoring and Reporting Program requires the County conduct EC and TDS monitoring of the municipal water supply. EC and TDS are monitored by the SMD 1 service area water suppliers, Nevada Irrigation District and Placer County Water Agency. The County requests this section be modified as follows:

> The Discharger shall report on the EC and TDS levels in the municipal water supply delivered to the Discharger's service area. This may be accomplished either by monitoring at SPL-001 at the

monitoring frequencies specified in Table E-8 or by obtaining monitoring results from the municipal water suppliers in the Discharger's service area. ~~Municipal water supply samples shall be collected at approximately the same time as effluent samples.~~

p. E-16, B. Self Monitoring Reports (SMRs). **[Comment Remains Applicable]** The County requests the addition of a paragraph (similar to paragraph 6 Multiple Sample Data on Page E-15 for priority pollutants) that specifies how to compute an arithmetic mean when a non-priority pollutant data set (e.g. BOD) includes one or more reported determinations of ND and DNQ.

Attachment F - Fact Sheet

p. F-6, Table F-2, Historic Effluent Limitations and Monitoring Data. **[Comment Remains Applicable]** The table is incomplete. The County requests that historic effluent limitations and monitoring data also be added for Arsenic, Chlorodibromomethane, Electrical Conductivity, Turbidity and Chronic Toxicity (since each constituent is subject to a proposed limitation). In addition, "(as N)" should be added after Total Ammonia.

p. F-7, Table F-2, Historic Effluent Limitations and Monitoring Data. **[Comment Remains Applicable]** The County requests the following footnote be added to the existing "average dry weather flow" effluent limitation and be added on Page F-8 to provide clarification that this limitation is not a "maximum daily" limitation as shown in the table:

[31] Defined as the average of daily flows for the three-month period of July, August, and September.

p. F-9, E. Planned Changes. [**Comment has been Addressed in Revised Tentative Order**] The County requests that the first sentence of the second paragraph of this section be revised as follows:

Since the estimated cost for the Discharger to participate in regionalization is $41 Million greater than the cost to upgrade the SMD 1 WWTP, the Discharger has indicated it plans to upgrade the treatment process to comply with permit requirements in the report of waste discharge.

Furthermore, the County requests the last paragraph of this section be modified as follows:

As described further in section IV.D.4 of this Fact Sheet, ~~degradation of water quality resulting from the proposed increased discharge is not in the best interest of the people of the State and is not consistent with State and federal antidegradation requirements. Furthermore, construction of the proposed expansion is not planned until December 2014 and it is uncertain whether construction would actually be completed within the term of this Order. Therefore,~~ this Order does not authorize the Discharger's proposed increase. This Order contains a reopener provision to reconsider the proposed increase upon availability of additional information indicating that an increase in ~~flow~~ discharge to Rock Creek is consistent with the State's Antidegradation Policy ~~in the best interest of the people of the State and documentation of the Discharger's diligent efforts towards regionalization~~.

p. F-16, Applicable Technology Based Requirements for BOD and TSS. **[Comment Remains Applicable]** This paragraph incorrectly includes a discussion of the water quality-based effluent

limitations for BOD and TSS applied to the discharge to achieve the equivalent of tertiary treatment in order to protect beneficial uses. These are not technology-based requirements, which for POTWs under the Clean Water Act are defined as secondary treatment. This paragraph should be deleted and replaced with the paragraph below. The remainder of the paragraph should be moved to the discussion of water quality based effluent limitations and revised as indicated:

> **a. BOD_5 and TSS**. Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD5 and TSS. As discussed in the following section, water quality based effluent limitations for BOD and TSS based on tertiary treatment are necessary to protect the beneficial uses of the receiving waters. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a technology based effluent limitation requiring an average of 85 percent removal of BOD5 and TSS over each calendar month.

Insert the following at p. F-47, **xi. Pathogens**:

> This permit contains water quality based effluent limitations for BOD and TSS based on the technical capability of the tertiary process. BOD5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD5 and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD5 and TSS than the technology based secondary standards currently prescribed; the 30-day average BOD5 and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

p. F-17, Footnote #1 to Table F-3. [**Comment has been Addressed in Revised Tentative Order**] The County requests the following edit be made to this footnote to define the average dry weather period as these three months: "~~e.g.~~ i.e., July, August, and September."

p. F-29, IV.C.2.e. Assimilative Capacity/Mixing Zone. [**Comment has been Addressed in Revised Tentative Order**] The Fact Sheet states that the worst-case dilution in Rock Creek and Dry Creek is zero and that effluent limitations must be end-of-pipe limits. This finding is made based on other findings that flows in Rock Creek and Dry Creek depend on releases from upstream reservoirs, and that information from USGS maps and site visits indicate that these creeks had intermittent flows prior to the year-round flows that now exist with these reservoirs in place. A finding regarding available dilution based on what hypothetical unimpaired flows could be, rather than what actual flows have been, does not reflect the reality of water operations on

these creeks. The upstream reservoirs are not slated for removal and there is no reason to believe that Nevada Irrigation District (NID) will stop delivering water to customers, as it currently does via Rock Creek, at least not within the five-year term of a NPDES permit. The County requests that the Regional Water Board determine the flows in Rock Creek and Dry Creek that are available for dilution using actual creek flow data, rather than a hypothetical flow condition that does not exist. The 10-year flow data set provides a substantial record of actual flows for Rock Creek and Dry Creek that should be used as the basis for determining available dilution. There is no technical justification to do otherwise.

p. F-37, IV.C.3.c.I. (a) Aluminum WQO. [**Comment Replaced by August 9, 2010 Comment**] The County requests that all language pertaining to the speculation of future effluent hardness be removed from the Tentative Order. See also the Aluminum comment on p. 6-7 of this attachment. At a minimum, the County requests the text be modified as follows, as it is not certain the magnesium hydroxide use will cease and the degree of hardness reduction that may occur cannot be judged as "significant" when it is unknown at this time.

> Although the effluent hardness may currently increase the downstream hardness, future modifications of the treatment process may result in changes in ~~to discontinue addition of~~ magnesium hydroxide use. These changes may ~~significantly~~ reduce the effluent hardness and, consequently, the downstream receiving water hardness to levels supportive of the applicability of the NAWQC chronic criteria for aluminum.

p. F-59, Table F-9, Summary of Effluent Limitations. [**Comment has been Addressed in Revised Tentative Order**] The County requests Footnote #1 of Table F-3 defining "average dry weather flow" be added to this table.

p. F-63, 4. Satisfaction of Antidegradation Policy. [**Comment has been Addressed in Revised Tentative Order**] As noted in the General Comments, the County is concerned that the Antidegradation Policy discussion is incomplete. The County requests this section be revised as follows to fully disclose the findings from the Antidegradation Analysis and clarify that it is the conclusions of the socioeconomic analysis of the Antidegradation Analysis with respect to regionalization that the Regional Water Board disagrees with. The text below is proposed for the Tentative Order, which is currently written to justify denial of the requested capacity expansion – though the County disagrees with this conclusion as discussed in our other comments provided herein.

> The Discharger developed a report titled, *Antidegradation Analysis for the Placer County SMD1 Wastewater Treatment Plant*, October 2009 (Robertson-Bryan Inc.), that provides an antidegradation analysis following the guidance provided by State Water Board APU 90-004. Pursuant to the guidelines, the Antidegradation Analysis evaluated whether changes in water quality resulting from a proposed ~~new~~ expanded capacity discharge to Rock Creek (proposed increase of 0.52 MGD for a total discharge of 2.7 MGD of tertiary treated wastewater) are consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and that the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses. ~~The Regional Water Board does not concur~~

~~with the Discharger's Antidegradation Analysis.~~Facts and findings from the Antidegradation Analysis are summarized below.

a. Water quality parameters and beneficial uses which will be affected by the proposed expansion and the extent of the impact. 40 CFR 131.12 defines the following tier designations to describe water quality in the receiving water body.

Tier 1 Designation*: Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. (40 CFR 131.12)*

Tier 2 Designation*: Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 CFR 131.12)*

The tier designation is assigned on a pollutant-by-pollutant basis. The following is the potential effect of the proposed expanded capacity 2.7 MGD ADWF discharge on water quality in Rock Creek, as assessed in the Antidegradation Analysis:

i. Rock Creek was designated as a Tier 1 receiving water for aluminum, bis (2-ethylhexyl) phthalate, and iron because these constituents were detected in the receiving water above water quality criteria. Thus, the SIP independently requires effluent limitations for these constituents, when detected in the discharge, as the means to prevent further degradation of the receiving water regardless of whether constituent levels in the proposed increased discharge do/do not exceed water quality criteria. For bis (2-ethylhexyl) phthalate, it is probable that the historical detects are due to contamination prior to implementing clean sampling techniques. The proposed incremental increase in discharge would not significantly lower water quality for these constituents in Rock and Dry creeks, relative to that which would occur under the current permitted capacity for the SMD1 WWTP, and would not change the Tier 1 designations.

ii. The proposed increase in discharge would use less than 10 percent of available assimilative capacity for all constituents assessed. Thus, the proposed increased discharge will be protective of beneficial uses, will maintain greater than 90 percent of assimilative capacity in Rock Creek, and will not change the Tier 2 designations.

iii. The proposed increase in discharge would use less than 10 percent of available assimilative capacity on a mass loading basis for total dissolved solids and the bioaccumulative constituents mercury and selenium, and will not change the Tier 2 designations.

b. Scientific rationale for determining that the proposed action will or will not lower water quality. The rationale used in the Antidegradation Analysis is based on 40 CFR 131.12, USEPA memorandum Regarding Tier 2 Antidegradation Reviews and Significance Thresholds (USEPA 2005), USEPA Region 9 Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12 (USEPA 1987), State Water Board Resolution No. 68-16, a State Water Board 1987 policy memorandum to the Regional Water Boards, and an Administrative Procedures Update (APU 90-004) issued by the State Water Board to the Regional Water Boards.

The scientific rationale used in the Antidegradation Analysis to determine if the proposed expansion would result in a lowering of water quality is to determine the reduction of available assimilative capacity. Assimilative capacity was calculated on a mass-balanced, concentration basis and, for bioaccumulative constituents, calculated on a mass loading basis. This approach is consistent with recent USEPA guidance and addresses a key objective of the antidegradation analysis to "[c]*ompare receiving water quality to the water quality objectives established to protect designated beneficial uses*" (APU 90-004). USEPA has recommended ten (10) percent as a measure of significance for identifying those substantial lowerings of water quality that should receive a full tier 2 antidegradation review. APU 90-004 requires the consideration of "feasible alternative control measures" as part of the procedures for a complete antidegradation analysis.

The Antidegradation Analysis analyzed each pollutant detected in the effluent and receiving water to determine if the proposed increase in discharge from 2.18 MGD to 2.7 MGD would allow a significant increase of the amount of pollutants present in the upstream and downstream receiving water influenced by the proposed discharge. Pollutants that would significantly increase concentration or mass downstream would have required an alternatives analysis to determine whether implementation of alternatives to the proposed action would be in the best socioeconomic interest of the people of the region, and be to the maximum benefit of the people of the State. Details on the scientific rationale are discussed in detail in the Antidegradation Analysis.

The Regional Water Board concurs with this scientific approach.

c. A description of alternative control measures considered. Resolution 68-16 requires that degradation of water quality be consistent with maximum benefit to the people of the State. APU 90-004 identifies factors to be considered for regulatory actions "*that, in the Regional Board's judgement* [sic]*, will result in a significant increase in pollutant loadings"* (i.e., when a complete antidegradation analysis is required) when determining whether the discharge is necessary to accommodate social or economic development and is consistent with maximum public benefit~~,~~. The USEPA (2005) has recommended ten (10) percent use of available assimilative capacity as the measure of significance for identifying those substantial lowerings of water quality that should receive a full tier 2 antidegradation review. The Regional Water Board is exercising its judgment to require a complete antidegradation analysis, and ~~which includes~~ implementation of feasible alternative control measures which might reduce, eliminate, or compensate for negative impacts.

i. Alternative control measures in Antidegradation Analysis. The Discharger considered several alternatives that would reduce or eliminate the lowering of water quality resulting from the proposed increase in discharge from 2.18 MGD to 2.7 MGD. [**insert the paragraph on p.**

F-63 of the Tentative Order beginning with this sentence and the subsequent paragraphs through Table F-10].

ii. **Additional information considered by Regional Water Board.** Table 3-1 of the Report of Waste Discharge summarized the existing and projected demands within the service area. As shown in Table 3-1, the projected demand will not surpass the current treatment capacity of 2.18 MGD until after 2020. Furthermore, the projected demand of 2.7 MGD on which the Discharger's request is based is not expected until 2034. Based on the information provided in the Report of Waste Discharge, demand is not expected to exceed the current treatment capacity of the Facility within the term of this permit. However, in a letter dated 22 February 2010, the Discharger expressed its need to expand the Facility capacity concurrent with implementing the upgrades necessary to achieve compliance with this Order for economical and logistical reasons. ~~Therefore, the Regional Water Board concludes that an increase in permitted flow is not necessary at this time.~~

The Discharger reported at the April 2009 Board Meeting, and in a subsequent semiannual progress report submitted 1 June 2009, that the Discharger is continuing to actively pursue regionalization. In a letter dated 22 February 2010, the Discharger indicated that the regionalization project would take at least 2 years to complete beyond the 5 years requested for the proposed expansion project (i.e., in 7 years) due to delays associated with the slow pace of acquiring federal funding and the need to resolve complex issues between the Discharger and other local entities. ~~Given the Discharger's recent documented intent to pursue regionalization, which would occur well before the demand in the service area approaches the current permitted capacity, expansion of the Facility to accommodate wastewater flows associated with planned growth by 2034 is unnecessary.~~

The Regional Water Board adopted Resolution No. R5-2009-0028 in Support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants on 23 April 2009, which requires the Regional Water Board to facilitate opportunities for regionalization and consider innovative permitting options when existing NPDES permit requirements, waste discharge requirements, and/or enforcement Orders inhibit the ability to implement regionalization. Resolution No. R5-2009-0028 identifies a number of potential benefits to regionalization including the following: ~~First, coordinated management of water supplies and wastewaters on a regional basis promotes efficient utilization of water. Second, reducing discharges of wastewater into seasonal or ephemeral streams such as Rock Creek and Dry Creek reduces habitat changes to the waterbodies that occur when wastewater is discharged into stream channels at locations, volumes or times when flow is not naturally present in the streams. Lastly,~~

- *"Reducing discharges of wastewater into seasonal or ephemeral streams reduces habitat changes to the waterbodies that occur when wastewater is discharged into stream channels at locations, volumes or times when flow is not naturally present in the streams."*
- *"The costs of constructing, expanding, upgrading and maintaining wastewater collection and treatment systems are large, and can be severe impact on small communities and small economically disadvantaged communities. Increased rates on most communities,*

but especially for the small communities in particular, result in the likelihood of a successful Proposition 218 challenge to rate increases, which may make compliance with regulations and improvements in water quality difficult or impossible for some communities. While the capital investment for regionalization of wastewater collection and treatment systems may result in a higher initial cost of upgrading an existing facility to meet current regulatory requirements, costs associated with meeting future regulatory requirements and system upgrades can be spread over a larger population and will ultimately reduce the per capita costs of wastewater treatment and disposal. Regionalization will also increase the technical and economical feasibility of a higher level of wastewater treatment, allowing the treated water to be a "resource" and not merely a "waste."

The Discharger has stated that current financial projections performed by the County do not support a finding that there is a future economic benefit of regionalization. As shown in Table F-10 (taken from the Antidegradation Analysis) both the capital cost and the ongoing operational cost of regionalization are higher than the proposed upgrade and expansion cost.

Furthermore, the Resolution No. R5-2009-0028 makes several findings including:

- *"Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water."*
- *"Evaluating regionalization, reclamation, recycling and/or conservation opportunities requires a balancing of these and many other considerations, including impacts to water quality, costs, authority to implement and other factors necessary to determine if regionalization, reclamation, recycling and/or conservation are feasible and practicable for the specific facility(ies)."*
- *"Focused, long-range planning is necessary to identify and implement regionalization, reclamation, recycling and/or conservation opportunities. This is a continuing process in that certain projects may not be technically or fiscally feasible at this time, but may become feasible as the community grows, treatment systems are upgraded, or other factors change with time."*

~~For instance,~~ As an example of the potential, through regionalization, to treat the discharge as a resource rather than a waste, the City of Lincoln Wastewater Treatment and Reclamation Facility has a Master Reclamation Permit (Order No. R5-2005-0040) to use recycled water for the irrigation of fodder crops, rice, impoundments, industrial process cooling, and other purposes in the local community, whereas the Discharger determined that reclamation of its wastewater is not feasible at this time, as described in this section above (i.e., IV.D.4.b).

~~In balancing the proposed expansion against the public interest, the Regional Water Board finds that the reduction in water quality associated with the expansion is not offset by maximum public benefit to the people of the State. In particular, implementation of feasible alternative control measures (i.e., regionalization) are available that will reduce, eliminate, or compensate for the negative impacts of the proposed expansion. Therefore, the increased flows associated with the expansion cannot be permitted. This Order includes a reopener that~~

~~will allow the Regional Water Board to reopen the Order to allow an increased discharge to Rock Creek upon availability of additional information indicating that an increase in flow to Rock Creek is in the best interest of the people of the State and documentation of the Discharger's diligent efforts towards regionalization. This Order also requires annual reporting on the Discharger's efforts towards regionalization.~~

d. Socioeconomic Evaluation. The objective of the socioeconomic analysis was to determine if the lowering of water quality in Rock Creek and Dry Creek is in the maximum interest of the people of the State. The socioeconomic evaluation considered:

1. The social benefits and costs based on the ability to accommodate socioeconomic development in the Placer County General Plan.

2. The magnitude of the change in water quality from existing conditions, the water quality impacts, and expected effects on beneficial uses of Rock and Dry creeks and downstream waters.

3. The feasibility and effectiveness of reducing the lowering of water quality by implementing alternatives to lowering of Rock Creek and Dry Creek water quality.

4. The economic costs for alternatives and assessed alternative costs against the current project expansion cost estimate of $87 million, the increased cost for ratepayers, and the magnitude of the change in ratepayer costs.

e. The rationale for determining that the proposed action is or is not justified by socioeconomic considerations.

i. The Antidegradation Analysis rationale. The Antidegradation Analysis provided the following rationale to justify the proposed expansion:

1. Having new development in the region independently treat its wastewater in an effort to eliminate any incremental degradation of water quality in Rock and Dry creeks would not be cost-effective, may not reduce loadings to downstream portions of the watershed (e.g., Sacramento River), and may not improve water quality (from a constituent concentration basis) throughout Rock and Dry creeks. Moreover, disposal of the new development's wastewater elsewhere may simply cause similar and possibly new forms of degradation elsewhere in Rock and Dry creeks, in other surface waterbodies, or in groundwater.

2. An evaluation of several alternatives, and their effects on water quality impacts and beneficial use protection, did not identify any feasible alternative control measure that more effectively would accommodate the planned and approved growth that would result from implementing the alternative, relative to implementing the proposed project (i.e., planned upgrade/expansion). The alternatives were found infeasible for cost or logistic concerns or both, when compared to the proposed action of increased SMD 1 WWTP discharge.

3. The SMD1 WWTP has sought to identify customers for use of recycled water. Currently prospective customers can obtain water from NID at a cheaper cost, however, the County will continue to pursue potential recycled water use opportunities in the future, thereby minimizing discharges to surface waters.

4. The County will continue to operate a treatment train that meets and exceeds BPTC and will facilitate greater use of recycled water, upon demand for such water developing in the area.

5. The limited degradation in receiving water quality that may occur as a result of planned discharge expansion is not significant and would accommodate important socioeconomic development in the service area while maintaining full protection of the Rock Creek and Dry Creek beneficial uses.

6. Downstream water quality, within Rock and Dry creeks, resulting from the proposed expansion would not cause a nuisance and would continue to be protective of all beneficial uses within the creek, as well as uses of downstream waters.

ii. Regional Water Board rationale. Potential degradation identified in the Antidegradation Analysis is not justified by the following considerations:

1. Projected demand for treatment will not exceed the current treatment capacity of 2.18 MGD until 2020, which is five years after the term of this permit; and

2. The Discharger continues to pursue the regionalization alternative concurrent with the proposed expansion, and estimates that regionalization could be complete in seven years, should funding become available and make this project feasible, which is before the demand in the service area is projected to approach the current permitted capacity, but after final effluent limitations in this Order become effective.

Given that projected demand for treatment will not exceed the treatment capacity of 2.18 MGD until 2020 and that regionalization continues to be a feasible option, provided that adequate funding options are available, the Regional Water Board finds that the requested increase in discharge capacity to 2.7 MGD cannot be permitted. This Order includes a reopener that will allow the Regional Water Board to reopen the Order to allow an increased discharge to Rock Creek upon availability of additional information indicating that an increase in flow to Rock Creek is in the best interest of the people of the State.

p. F-80, b. Infiltration and Inflow (I/I) Reduction Program. [**Comment has been Addressed in Revised Tentative Order**] The County conducts smoke testing of the collection system annually. As a result of this smoke testing, the County has been able to identify private sector defects. In such cases, the County sends letters to the homeowner and follows up to make sure the defects are corrected. These repairs are relatively minor and most (approximately 99%) of the defects identified are corrected by the homeowner in one to two months. These types of defects cannot be readily identified until smoke testing is conducted. As such, it is not practical for the County prioritize or schedule repairs of these types of defects. Furthermore, they are

readily corrected, thus it is not practical for the County to log and track the status of work remaining to complete these repairs in an annual report. As such, the County requests the following modifications to the 5th paragraph of this section:

> Based on a review of the Discharger's January 2010 Report, additional measures are necessary to reduce levels of I/I in the Discharger's collection system. This Order requires the Discharger to complete the repairs identified in the priority list from the July 2007 Report. The Discharger must also re-evaluate the collection system and submit an updated priority list and implementation schedule for additional repairs within 6 months of adoption of this Order. ~~The July 2007 Report indicated that defects on private property have been identified. Therefore, the updated priority list and implementation schedule shall also address private sector I/I sources, including identification of the types and numbers of private sector defects and efforts necessary to achieve defect corrections.~~ The Discharger is required to maintain a log and shall submit an annual report with tabular summaries of work completed and work remaining to complete the repairs identified in the updated priority list. The Discharger shall complete repairs of the collection system in accordance with the updated priority list and implementation schedule within 18 months of adoption of this Order.

IV. EXPANSION OPTION

Waste Discharge Requirements

p. 3 of 20, 7. Ultraviolet Disinfection (UV) System Operating Specifications. **[Comment Remains Applicable]** The County requests that these requirements that relate to how the UV disinfection system is operated and maintained be deleted. No similar requirements were ever specified for the chlorine disinfection process, such as motile contact time. The Standard Provisions in Attachment D of the Tentative Order already require proper operation and maintenance. As with the chlorine disinfection process, adequate disinfection should be demonstrated by compliance with the total coliform organisms effluent limitation. See also the Prescription of Operations and Treatment comment on p. 4-5 of this attachment.

p. 4 of 20, 6. Other Special Provisions. **[Comment Remains Applicable]** The County requests conditions "i" (Effluent and Receiving Water Compliance) and "iii" (Request for Increase) be removed from this Special Provision. The permitted average dry weather flow should only be contingent on completion of the SMD 1 WWTP upgrades and expansion. This is consistent with other permits adopted by the Regional Water Board in the past. (See Waste Discharge Requirements for City of Roseville, Order No. R5-2008-0079.) Conditions "i" and "iii" are ambiguous and leave uncertainty regarding whether expanded capacity will be authorized by the Executive Officer. When investing many tens of $millions in improving the performance and expanding the capacity of the SMD1 WWTP, which will occur during the life of this renewed permit, the County needs greater certainty in this Order regarding how the Regional Water Board will regulate the upgraded/expanded facility.

Monitoring and Reporting Program (Attachment E)

p. 5 of 20, 11., C. 1. Monitor Ultraviolet Disinfection (UV) System Operating Specifications. **[Comment Remains Applicable]** The County requests that these additional UV disinfection

process monitoring requirements be deleted. No special monitoring requirements were ever specified for the chlorine disinfection process, such as motile contact time. The Standard Provisions in Attachment D already require proper operation and maintenance. Further, there are no effluent limitations that relate to UV system flow rate, turbidity, number of banks in operation, UV transmittance, UV power setting or UV dose.

Fact Sheet (Attachment F)

p. 9 of 20, Table F-9, Summary of Final Effluent Limitations. **[Comment Remains Applicable, Additional August 9, 2010 comments provided for aluminum]** Consistent with our comments on the Tentative Order (above) that effluent limitations for aluminum, arsenic, copper, lead, and electrical conductivity are not warranted, the County requests that these constituents be deleted from this table.

p. 10 of 20, item 19. Satisfaction of Antidegradation Policy. [**Comment has been Addressed in Revised Tentative Order**] As noted in the General Comments the County is concerned that the Antidegradation Policy discussion is incomplete. For simplicity in illustrating the recommended edits, the strikethrough/underline text edits in the "Expansion Option" have been "accepted" so that the County's requested insertions are provided as single underline and deletions are provide as ~~single strikethrough~~.

> The Discharger developed a report titled, *Antidegradation Analysis for the Placer County SMD1 Wastewater Treatment Plant*, October 2009 (Robertson-Bryan Inc.), that provides an antidegradation analysis following the guidance provided by State Water Board APU 90-004. Pursuant to the guidelines, the Antidegradation Analysis evaluated whether changes in water quality resulting from a proposed ~~new~~ expanded capacity discharge to Rock Creek (proposed increase of 0.52 MGD for a total discharge of 2.7 MGD of tertiary treated wastewater) are consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, will not cause water quality to be less than water quality objectives, and that the discharge provides protection for existing in-stream uses and water quality necessary to protect those uses. The Regional Water Board concurs with the Discharger's Antidegradation Analysis. Facts and findings from the Antidegradation Analysis are summarized below.
>
> a. **Water quality parameters and beneficial uses which will be affected by this Order and the extent of the impact**. This Order does not adversely impact beneficial uses of the receiving water or downstream receiving waters. All beneficial uses will be maintained and protected. This Order provides for an increase in the volume and mass of pollutants discharged directly to the receiving water. 40 CFR 131.12 defines the following tier designations to describe water quality in the receiving water body.
>
> ***Tier 1 Designation****: Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. (40 CFR 131.12)*
>
> ***Tier 2 Designation****: Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination*

and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 CFR 131.12)

The tier designation is assigned on a pollutant-by-pollutant basis. The following is the potential effect on ~~water quality parameters regulated in this Order, and~~ of the proposed expanded capacity 2.7 MGD ADWF discharge on water quality in Rock Creek, as assessed in the Antidegradation Analysis:

i. Rock Creek was designated as a Tier 1 receiving water for aluminum, bis (2-ethylhexyl) phthalate, and iron because these constituents were detected in the receiving water above water quality criteria. Thus, the SIP independently requires effluent limitations for these constituents, when detected in the discharge, as the means to prevent further degradation of the receiving water regardless of whether constituent levels in the proposed increased discharge do/do not exceed water quality criteria. For bis (2-ethylhexyl) phthalate, it is probable that the historical detects are due to contamination prior to implementing clean sampling techniques. The proposed incremental increase in discharge would not significantly lower water quality for these constituents in Rock and Dry creeks, relative to that which would occur under the current permitted capacity for the SMD1 WWTP, and would not change the Tier 1 designations.

ii. The proposed increase in discharge would use less than 10 percent of available assimilative capacity for all constituents assessed. Thus, the proposed increased discharge will be protective of beneficial uses, will maintain greater than 90 percent of assimilative capacity in ~~Orchard~~ Rock Creek, and will not change the Tier 2 designations.

iii. The proposed increase in discharge would use less than 10 percent of available assimilative capacity on a mass loading basis for total dissolved solids and the bioaccumulative constituents~~,~~ mercury~~,~~ and selenium, and ~~total dissolved solids~~ will not change the Tier 2 designations.

b. Scientific Rationale for Determining Potential Lowering of Water Quality. The rationale used in the Antidegradation Analysis is based on 40 CFR 131.12, USEPA memorandum Regarding Tier 2 Antidegradation Reviews and Significance Thresholds (USEPA 2005), USEPA Region 9 Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12 (USEPA 1987), State Water Board Resolution No. 68-16, a State Water Board 1987 policy memorandum to the Regional Water Boards, and an Administrative Procedures Update (APU 90-004) issued by the State Water Board to the Regional Water Boards.

The scientific rationale used in the Antidegradation Analysis to determine if the Order allows a lowering of water quality is to determine the reduction of available assimilative capacity. Assimilative capacity was calculated on a mass-balanced, concentration basis and, for

bioaccumulative constituents, calculated on a mass loading basis. This approach is consistent with recent USEPA guidance and addresses a key objective of the antidegradation analysis to "[c]*ompare receiving water quality to the water quality objectives established to protect designated beneficial uses*" (APU 90-004). USEPA has recommended ten (10) percent as a measure of significance for identifying those substantial lowerings of water quality that should receive a full tier 2 antidegradation review. APU 90-004 requires the consideration of "feasible alternative control measures" as part of the procedures for a complete antidegradation analysis.

The Antidegradation Analysis analyzed each pollutant detected in the effluent and receiving water to determine if the proposed increase in discharge from 2.18 MGD to 2.7 MGD authorized by this Order potentially allows significant increase of the amount of pollutants present in the upstream and downstream receiving water influenced by the proposed discharge. Pollutants that significantly increase concentration or mass downstream would have required an alternatives analysis to determine whether implementation of alternatives to the proposed action would be in the best socioeconomic interest of the people of the region, and be to the maximum benefit of the people of the State. Details on the scientific rationale are discussed in detail in the Antidegradation Analysis.

The Regional Water Board concurs with this scientific approach.

d. Alternative Control Measures Considered. Resolution 68-16 requires that degradation of water quality be consistent with maximum benefit to the people of the State. APU 90-004 identifies factors to be considered for regulatory actions "*that, in the Regional Board's judgement* [sic]*, will result in a significant increase in pollutant loadings"* (i.e., when a complete antidegradation analysis is required) when determining whether the discharge is necessary to accommodate social or economic development and is consistent with maximum public benefit~~,~~. The USEPA (2005) has recommended ten (10) percent use of available assimilative capacity as the measure of significance for identifying those substantial lowerings of water quality that should receive a full tier 2 antidegradation review. The Regional Water Board is exercising its judgment to require a complete antidegradation analysis, and ~~which includes~~ implementation of feasible alternative control measures which might reduce, eliminate, or compensate for negative impacts.

i. Alternative control measures in Antidegradation Analysis. The Discharger considered several alternatives that would reduce or eliminate the lowering of water quality resulting from the proposed increase in discharge from 2.18 MGD to 2.7 MGD. [**insert the paragraph on p. F-63 beginning with this sentence and the subsequent paragraphs through Table F-10**].

ii. **Additional information considered by Regional Water Board.** Table 3-1 of the Report of Waste Discharge summarized the existing and projected demands within the service area. As shown in Table 3-1, the projected demand will not surpass the current treatment capacity of 2.18 MGD until after 2020. Furthermore, the projected demand of 2.7 MGD on which the Discharger's request is based is not expected until 2034. Based on the information provided in the Report of Waste Discharge, demand is not expected to exceed the current treatment capacity of the Facility within the term of this Order. However, in a letter dated 22 February 2010, the Discharger expressed its need to expand the Facility capacity concurrent with

implementing the upgrades necessary to achieve compliance with this Order for economical and logistical reasons.

The Discharger reported at the April 2009 Board Meeting, and in a subsequent semiannual progress report submitted 1 June 2009, that the Discharger is continuing to actively pursue regionalization. In a letter dated 22 February 2010, the Discharger indicated that the regionalization project would take at least 2 years to complete beyond the 5 years requested for the proposed expansion project (i.e., in 7 years) due to delays associated with the slow pace of acquiring federal funding and the need to resolve complex issues between the Discharger and other local entities. The Regional Water Board concurs that regionalization is not currently feasible.

The Regional Water Board adopted Resolution No. R5-2009-0028 in Support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants on 23 April 2009, which requires the Regional Water Board to facilitate opportunities for regionalization and consider innovative permitting options when existing NPDES permit requirements, waste discharge requirements, and/or enforcement Orders inhibit the ability to implement regionalization. Resolution No. R5-2009-0028 identifies a number of potential benefits to regionalization including the following: ~~First, coordinated management of water supplies and wastewaters on a regional basis promotes efficient utilization of water. Second, reducing discharges of wastewater into seasonal or ephemeral streams such as Rock Creek and Dry Creek reduces habitat changes to the waterbodies that occur when wastewater is discharged into stream channels at locations, volumes or times when flow is not naturally present in the streams. Lastly,~~

- *"Reducing discharges of wastewater into seasonal or ephemeral streams reduces habitat changes to the waterbodies that occur when wastewater is discharged into stream channels at locations, volumes or times when flow is not naturally present in the streams."*
- *"The costs of constructing, expanding, upgrading and maintaining wastewater collection and treatment systems are large, and can be severe impact on small communities and small economically disadvantaged communities. Increased rates on most communities, but especially for the small communities in particular, result in the likelihood of a successful Proposition 218 challenge to rate increases, which may make compliance with regulations and improvements in water quality difficult or impossible for some communities. While the capital investment for regionalization of wastewater collection and treatment systems may result in a higher initial cost of upgrading an existing facility to meet current regulatory requirements, costs associated with meeting future regulatory requirements and system upgrades can be spread over a larger population and will ultimately reduce the per capita costs of wastewater treatment and disposal. Regionalization will also increase the technical and economical feasibility of a higher level of wastewater treatment, allowing the treated water to be a "resource" and not merely a "waste."*

The Discharger has stated that current financial projections performed by the County do not support a finding that there is a future economic benefit of regionalization. As shown in Table

F-10 (taken from the Antidegradation Analysis) both the capital cost and the ongoing operational cost of regionalization are higher than the proposed upgrade and expansion cost.

Furthermore, the Resolution No. R5-2009-0028 makes several findings including:

- *"Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water."*
- *"Evaluating regionalization, reclamation, recycling and/or conservation opportunities requires a balancing of these and many other considerations, including impacts to water quality, costs, authority to implement and other factors necessary to determine if regionalization, reclamation, recycling and/or conservation are feasible and practicable for the specific facility(ies)."*
- *"Focused, long-range planning is necessary to identify and implement regionalization, reclamation, recycling and/or conservation opportunities. This is a continuing process in that certain projects may not be technically or fiscally feasible at this time, but may become feasible as the community grows, treatment systems are upgraded, or other factors change with time."*

~~For instance,~~ As an example of the potential, through regionalization, to treat the discharge as a resource rather than a waste, the City of Lincoln Wastewater Treatment and Reclamation Facility has a Master Reclamation Permit (Order No. R5-2005-0040) to use recycled water for the irrigation of fodder crops, rice, impoundments, industrial process cooling, and other purposes in the local community, whereas the Discharger determined that reclamation of its wastewater is not feasible at this time, as described in this section above (i.e., IV.D.4.b).

In order to continue evaluating the feasibility of regionalization, this Order requires annual reporting on the Discharger's efforts towards regionalization concurrent with the upgrade and expansion project.

d. Socioeconomic Evaluation. The objective of the socioeconomic analysis was to determine if the lowering of water quality in Rock Creek and Dry Creek is in the maximum interest of the people of the State. The socioeconomic evaluation considered:

1. The social benefits and costs based on the ability to accommodate socioeconomic development in the Placer County General Plan.

2. The magnitude of the change in water quality from existing conditions, the water quality impacts, and expected effects on beneficial uses of Rock and Dry creeks and downstream waters.

3. The feasibility and effectiveness of reducing the lowering of water quality by implementing alternatives to lowering of Rock Creek and Dry Creek water quality.

4. The economic costs for alternatives and assessed alternative costs against the current project expansion cost estimate of $87 million, the increased cost for ratepayers, and the magnitude of the change in ratepayer costs.

~~Given the current infrastructure, future development in the service area would rely on the Discharger and its Facility for wastewater collection, treatment, and recycled water services. The expansion of the Facility from the current permitted flow of 2.18 MGD to 2.7 MGD would accommodate planned and approved growth in the surrounding areas. Placing connection bans on the Facility to prevent increased discharges, thereby eliminating any incremental change to Rock Creek and Dry Creek water quality, would have negative effects on important socioeconomic development in the area. Should the incremental changes in water quality in Rock Creek and Dry Creek characterized herein be disallowed, such action would: (1) force future developments in the Discharger's service area to find alternative methods for disposing of wastewater; (2) require adding microfiltration or a reverse osmosis treatment process to a significant portion of flow, and possibly other plant upgrades, to eliminate the small water quality changes; or (3) prohibit planned and approved development within and adjacent to the Discharger's service area. On balance, allowing the minor degradation of water quality is in the best interest of the people of the area and the State, compared to these other options; and is necessary to accommodate important economic or social development in the area.~~

e. Justification for Allowing Degradation.

i. The Antidegradation Analysis rationale. The Antidegradation Analysis provided the following rationale to justify the proposed expansion:

1. Having new development in the region independently treat its wastewater in an effort to eliminate any incremental degradation of water quality in Rock and Dry creeks would not be cost-effective, may not reduce loadings to downstream portions of the watershed (e.g., Sacramento River), and may not improve water quality (from a constituent concentration basis) throughout Rock and Dry creeks. Moreover, disposal of the new development's wastewater elsewhere may simply cause similar and possibly new forms of degradation elsewhere in Rock and Dry creeks, in other surface waterbodies, or in groundwater.

2. An evaluation of several alternatives, and their effects on water quality impacts and beneficial use protection, did not identify any feasible alternative control measure that more effectively would accommodate the planned and approved growth that would result from implementing the alternative, relative to implementing the proposed project (i.e., planned upgrade/expansion). The alternatives were found infeasible for cost or logistic concerns or both, when compared to the proposed action of increased SMD 1 WWTP discharge.

3. The SMD1 WWTP has sought to identify customers for use of recycled water. Currently prospective customers can obtain water from NID at a cheaper cost, however, the County will continue to pursue potential recycled water use opportunities in the future, thereby minimizing discharges to surface waters.

4. The County will continue to operate a treatment train that meets and exceeds BPTC and will facilitate greater use of recycled water, upon demand for such water developing in the area.

5. The limited degradation in receiving water quality that may occur as a result of planned discharge expansion is not significant and would accommodate important socioeconomic development in the service area while maintaining full protection of the Rock Creek and Dry Creek beneficial uses.

6. Downstream water quality, within Rock and Dry creeks, resulting from the proposed expansion would not cause a nuisance and would continue to be protective of all beneficial uses within the creek, as well as uses of downstream waters.

ii. Regional Water Board rationale. Potential degradation identified in the Antidegradation Analysis due to this Order is justified by the following considerations:

1. Implementation of alternatives does not provide important socioeconomic benefit to the people of the region, nor do they provide maximum benefit to the people of the State. The alternatives to the proposed project would inhibit socioeconomic growth making it economically infeasible for any new development to occur;

2. The Discharger's planned wastewater treatment facility will produce Title 22-equivalent tertiary treated effluent that will result in minimal water quality degradation. The Discharger's planned wastewater treatment process will meet or exceed the highest statutory and regulatory requirements which meets or exceeds best practical, treatment and control (BPTC);

3. The Order is fully protective of beneficial uses of Rock Creek and Dry Creek. The anticipated water quality changes in Rock Creek and Dry Creek will not reduce or impair designated beneficial uses and is consistent with State and federal antidegradation policies;

4. No feasible alternatives currently exist to reduce the impacts available; and

5. The Discharger has fully satisfied the requirements of the intergovernmental coordination and public participation provisions of the State's continuing planning process concurrent with the public participation period of this Order.

p. 11 of 20, Item ii. "Orchard Creek" should be changed to "Rock Creek," which is the SMD 1 WWTP receiving water. [**Comment has been Addressed in Revised Tentative Order**]

p. 18 of 20, Ultraviolet Disinfection Monitoring and 19 of 20, Ultraviolet (UV) System **[Comment Remains Applicable]** Operating Specifications. The County requests that the requirements that relate to how the UV disinfection system is monitored, operated and maintained be deleted for the reasons specified in the "Prescription of Operations and Treatment" comment on pp. 4-5 of this attachment.

ATTACHMENT C

Compliance Activities, Operations Changes, Collection System Improvements, Regionalization, and Upgrade and Expansion Plans for the Sewer Maintenance District 1 Wastewater Treatment Plant – June 2005 through July 2010

ATTACHMENT C

COMPLIANCE ACTIVITIES, OPERATIONS CHANGES,
COLLECTION SYSTEM IMPROVEMENTS, REGIONALIZATION,
AND UPGRADE AND EXPANSION PLANS FOR THE
SEWER MAINTENANCE DISTRICT 1
WASTEWATER TREATMENT PLANT

JUNE 2005 THROUGH JULY 2010

This attachment describes County of Placer's (County) compliance and facility improvement actions undertaken since adoption of the current NPDES permit and Cease and Desist Order (CDO) for the Sewer Maintenance District 1 (SMD 1) Wastewater Treatment Plant (WWTP) on June 23, 2005. The County has been very aggressive over the last 5 years in addressing all aspects of improving existing WWTP performance and planning for the future at a cost of approximately **$10.6 million**. Actions undertaken include the following.

- Regional Sewer Planning - **$3.5 million**.
    - The County has continued to pursue Regionalization at a total cost of over **$3.5 million** (as of July 31, 2010).
    - The County recently executed a $170,000 contract to evaluate the assumptions used to develop the cost estimates.
    - In addition, Placer County and the City of Lincoln have required developers to build over $25,000,000 in infrastructure in anticipation of Regionalization.
- Upgrade and Expansion Planning and Design – **$1.2 million**.
    - The County has expended **$1.2 million** (as of July 31, 2010) on the planning and predesign of the SMD 1 WWTP Upgrade and Expansion Project since June of 2005.
    - The County recently executed $8.2 million in contracts for design and environmental services (contracts approved May 17, 2010).
    - In addition, the County raised rates in Spring 2009 from $67.84/month to $82.00/month to fund the planning and design of the Upgrade and Expansion Project.
- Collection System Investigations and Improvements - **$5.2 million**.
    - The County has expended approximately **$5.2 million** (as of July 31, 2010) investigating and improving the collection system and initiating the Siphon Relief Project to reduce inflow and infiltration (I/I) and peak WWTP influent flows.

- NPDES Permit Related Studies, Plans and Reports - **$330,000**.
    - The County has expended approximately **$330,000** (as of July 31, 2010) completing NPDES permit-related work plans, special studies and reports.
- Operations Improvements - **$300,000**.
    - The County has expended approximately **$300,000** (as of July 31, 2010) evaluating and implementing operations changes at the SMD 1 WWTP to improve treatment process efficiency and final effluent quality.

ATTACHMENT D

Supplemental Infeasibility Report for the Sewer Maintenance District 1 Wastewater Treatment Plant

SUPPLEMENTAL INFEASIBILITY REPORT
FOR THE
SEWER MAINTENANCE DISTRICT 1 WASTEWATER TREATMENT PLANT

Owen Psomas Project No. 6PLA170900

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SUPPLEMENTAL INFEASIBILITY REPORT
FOR THE
SEWER MAINTENANCE DISTRICT 1 WASTEWATER TREATMENT PLANT

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GLOSSARY OF TERMS

Term	Description
ADWF	average dry weather flow
AF	acre feet
BOD	biochemical oxygen demand
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
County	Placer County, Department of Facility Services
Cl or Cl2	chlorine
CMC	Criteria Maximum Concentration
CTR	California Toxics Rule
CWA	Clean Water Act (Federal Water Pollution Control Act, PL 92-500 as amended)
DFG	State of California, Department of Fish and Game
DPH	State of California, Department of Public Health
DO	dissolved oxygen
EC	electrical conductivity
EPA	(see USEPA)
gpd	gallons per day
gph	gallons per hour
gpm	gallons per minute
h	hour
I/I	Infiltration and Inflow
kg	kilograms
lb/day	pounds per day
LF	lineal feet
MCL	maximum containment level
MEC	maximum effluent concentration
mgd	million gallons per day of water or wastewater flow (one mgd equals 694.4 gallons per minute).
mg/L	milligrams per liter (parts per million)
ml	milliliter
MPN	most probable number (organism count)

GLOSSARY OF TERMS

Term	Description
N	nitrogen
NEPA	National Environmental Policy Act
NID	Nevada Irrigation District
NPDES	National Pollutant Discharge Elimination System. An enforceable permit system established by the Clean Water Act for discharges to surface water
NTR	National Toxics Rule
O&M	operations and maintenance
PCWA	Placer County Water Agency
POTW	publicly owned treatment works
RPA	Reasonable Potential Analysis
RWQCB	California Regional Water Quality Control Board, Central Valley Region
SMD 1 WWTP	Sewer Maintenance District 1 Wastewater Treatment Plant
SRF	State Revolving Fund
SWRCB	State Water Resources Control Board
THM	trihalomethane
TSS	total suspended solids
TTHMs	total trihalomethanes
µg/L	micrograms per liter (parts per billion)
USEPA	United States Environmental Protection Agency.
UV	ultraviolet light
WAS	waste activated sludge
WQC	water quality criteria
WQO	water quality objective
WWTP	Wastewater Treatment Plant
40 CFR Part 403	Federal pretreatment regulations promulgated under CWA

SUPPLEMENTAL INFEASIBILITY REPORT
FOR THE
SEWER MAINTENANCE DISTRICT 1 WASTEWATER TREATMENT PLANT

1 INTRODUCTION

1.1 **Background**. The Placer County, Department of Facility Services (County) owns and operates the Sewer Maintenance District No.1 Wastewater Treatment Plant (SMD 1 WWTP). Treated water from the SMD 1 WWTP is discharged to Rock Creek. The current waste discharge requirements are specified in Order No. R5-2005-0074, NPDES Permit No. CA0079316, Waste Discharge Requirements for Placer County Department of Facility Services, Placer County Sewer Maintenance District No. 1 Wastewater Treatment Plant, Placer County (NPDES Permit).

Rock Creek is a small, perennial creek of the western Sierra Nevada range. Rock Creek is a tributary to Dry Creek, the Bear River, and the Sacramento River, and is within the Upper Cool-Upper Auburn watershed.

As described in much greater detail in the County's NPDES permit application dated November 2009, major improvements to the existing treatment plant are proposed with an expected completion date of April 2015. After completion of the SMD 1 WWTP Upgrade Project, the treatment process will include the following major components:

- New headworks with improved screening and grit removal equipment.
- New primary clarifiers.
- New flow equalization facilities.
- New aeration basins with biological nutrient removal capability.
- New secondary clarifiers.
- New tertiary filters.
- New ultraviolet disinfection facilities.
- New post-disinfection effluent aeration facilities.
- Converted Waste Activated Sludge (WAS) holding basins.
- Solids process improvements, including new and two renovated anaerobic digesters.

1.2 **Reasonable Potential Analysis (RPA).** The Central Valley Regional Water Quality Control Board (RWQCB) has initiated the renewal process for NPDES Permit No. CA0078956 for the SMD 1 WWTP. On March 12, 2010, the RWQCB issued a tentative permit and cease and desist order. On July 8, 2010, the RWQCB issued a revised tentative permit and cease and desist order. On July 30, 2010, the RWQCB issued tentative effluent limitations alternatives for Chloroform and Total Trihalomethanes (TTHMs). Appendix G of the tentative draft presented the results from the RPA conducted by RWQCB staff. The purpose of the RPA is "to determine whether the discharge has a reasonable potential to cause or contribute to an exceedance of applicable water quality objectives." The RWQCB developed proposed effluent limits whenever:

- The observed maximum effluent concentration (MEC) exceeds applicable water quality objectives and criteria (WQO/WQC) or;
- A receiving water background concentration for a pollutant constituent exceeds an applicable WQO/WQC and the constituent was detected in the effluent.

The RWQCB has requested that the County submit a Supplemental Infeasibility Report that demonstrates that compliance with the proposed effluent limitations for Chloroform and TTHMs, both non-CTR/NTR constituents, is currently infeasible. In order for a compliance schedule to be included in the proposed NPDES permit for the identified constituents, the Infeasibility Report must include the following justification:

"1. Documentation that the Discharger has made diligent efforts to quantify pollutant levels in the discharge and identify the sources of the pollutants in the waste stream. The documentation must include the results of those efforts and a statement that the Discharger will continue to monitor priority pollutants.

2. Documentation of source control and/or pollution minimization efforts is currently underway or completed. The documentation must include a discussion on all the actions necessary to reduce the pollutants in the waste stream at the source and an update on current actions being implemented for source control, etc.

3. A proposed schedule for additional source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades). The schedule must include an outline and time schedule to accomplish specific milestones, such as:

a. Facility optimization and analysis of influent/effluent monitoring data to achieve compliance and evaluate technologies available to meet effluent limitations;

b. Source water data (i.e., quarterly monitoring reports); and

c. Process controls and strategies to meet effluent limits.

4. Documentation demonstrating that the proposed schedule is as short as practicable, including a time schedule of tasks to accomplish each milestone."

1.3 **Purpose of this Supplemental Infeasibility Report**. The purpose of this report is to present information in support of the County's request for a compliance schedule for compliance with the Chloroform and TTHM effluent limitations associated with the reissued NPDES permit for the SMD 1 WWTP. Information presented in this report demonstrates it is infeasible for the County to achieve immediate compliance with some of the proposed effluent limitations.

The requested compliance schedule will provide County with the opportunity to design, construct, and startup the new SMD 1 WWTP improvements, and/or implement other measures to achieve compliance. Other measures may include, but would not necessarily be limited to, additional source control and modifications in treatment plant operations and/or other facility improvements.

2 DEMONSTRATION OF INFEASIBILITY TO IMMEDIATELY COMPLY

Table 1 shows that Chloroform and TTHM concentrations have the potential to exceed the proposed NPDES permit effluent limitations, and the corresponding MEC based on results from SMD 1 WWTP effluent sampling between July 2005 and June 2009.

Measures already taken by the County to achieve compliance include:

- Proceeding with the approximately $60 million SMD 1 WWTP Upgrade project. A preliminary design report has already been prepared and detailed design is underway. The project will essentially replace the primary, secondary, tertiary, disinfection processes, and substantially upgrade solids treatment process at the existing treatment plant.
- Preparing and submitting a number of reports related to these pollutants to the RWQCB, in accordance with the existing SMD 1 WWTP NPDES Permit, including those listed in Section 3.

Table 1. Constituents with Potential to Exceed Proposed NPDES Permit Effluent Limitations.

Constituent	Units	Proposed Effluent Limitations		SMD 1 WWTP Effluent Data 7/05 through 6/09	
				Samples Greater than Average Monthly Limitation	
		Average Monthly	MEC	Number	%
Chloroform	µg/L	1.1	99	22	96
TTHMs	µg/L	80	113*	8*	25

Note:
* The TTHM concentration was determined by summation of the analytical results for Chlorodibromomethane, Dichlorobromomethane, Chloroform and Bromoform in 8 effluent samples. There are no effluent samples that include an analysis for TTHMs itself.

The requested schedule for meeting the proposed effluent limitations is presented in Section 6 of this report. The requested schedule is driven primarily by the need to construct WWTP upgrades and, thereby, reflect the shortest practical timeframe to meet the requirements

3 POTENTIAL SOURCES OF DOCUMENTED POLLUTANTS

The County has conducted a number of studies and has prepared a number of reports that address the potential sources for these pollutants. These studies include:

- Cease and Desist Order No. 3 Report (Non-CTR Constituents and Turbidity) – July 2007.
- Industrial Pretreatment Program Report – September 2005.
- Cease and Desist Order No. 5 Pollution Prevention Plan for Sewer Maintenance District No. 1 – August 2005.
- Placer County SMD 1 Wastewater Master Plan, Facility Assessment Report – December 2007.
- SMD 1 WWTP Upgrade & Expansion Preliminary Design Report – April 2010.
- Provision F.10 Report on Study (CTR Constituents) – July 2007.

The County wastewater collection system receives wastewater from residential and commercial users. There are no significant industrial users. However, as noted in the County's Report of Waste Discharge, which was submitted in October 2009, there are two users that discharge groundwater remediation wastes to the WWTP.

Chloroform and TTHMs are disinfection by-products (i.e., by-products created during chlorine disinfection). The sources in the SMD 1 WWTP effluent include the final effluent disinfection process, and the domestic water supply disinfection process. In addition, domestic (residential) wastewater sources include consumer products (e.g., chlorine bleach, chlorine-based disinfectants).

The water supply for the SMD 1 WWTP service area consists of treated water supplied by either Nevada Irrigation District (NID) or Placer County Water Agency (PCWA). The water supply that is provided by NID and/or PCWA is disinfected using chlorine to meet State and Federal drinking water standards.

4 EXISTING SOURCE CONTROL AND POLLUTION MINIMIZATION PRACTICES.

Because the SMD 1 WWTP service area contains primarily residential and commercial users, the County has not conducted pollution prevention activities for the constituents discussed in this report. However, the County code does include prohibitions against discharges to the sewer system that contain substances or have characteristics which, either alone or by interaction with other wastewaters, cause or threaten to cause:

- Damage to the publically owned treatment works (POTW).
- Interference with or impairment of, operation of maintenance of County facilities, including flow overloading.
- Danger to life or safety of any person.
- Interference with treatment or disposal processes.
- Flammable or explosive conditions.
- Noxious or malodorous gases or odors.
- Discoloration or any other condition in the quality of the County's treatment plant effluent such that water quality requirements cannot be met by the County.

The County Code sets uniform requirements for discharges into the wastewater collection and treatment system, including the disposal of industrial wastes. All development applications for businesses that establish within the County undergo building plan review and approval through the Community Development Resource Agency.

5 PLANNED CONSTRUCTION AND ADDITIONAL SOURCE CONTROL AND POLLUTANT MINIMIZATION ACTIONS

Achieving full compliance with these constituents will require treatment plant modifications which would involve engineering design, and construction of the proposed improvements at the SMD 1 WWTP. The schedule for that construction is presented in Section 6. In addition, the County is proposing the following additional actions to address permit compliance. The actions include three distinct components: (1) treatment plant startup and optimization; (2) compliance monitoring and (3) long-term compliance response planning and implementation, if compliance problems continue to exist and improvements are deemed necessary.

5.1 **Treatment Plant Startup, Performance Testing, and Optimization**. After the new facilities are placed in service, the plant operators will need a startup and performance testing period to optimize the treatment processes and effluent quality.

5.2 **Compliance Monitoring and Data Evaluation**. Compliance monitoring will be utilized to confirm effluent concentrations and determine if additional actions, such as operations modifications, are needed.

5.3 **Compliance Response Planning and Implementation**. Should compliance monitoring confirm that the effluent quality produced at the SMD 1 WWTP exceeds the NPDES permit limitations for these constituents and the Upgrade project would not be expected to be sufficient to achieve compliance, the County would initiate the planning and implementation of appropriate response activities. Several options are available to provide for successful future compliance, including, but not limited to: (a) source control and pollutant minimization actions; (b) development and implementation of alternative operational strategies; or (c) further upgrades to aspects of the SMD 1 WWTP facilities and treatment processes. As required, the County will implement its industrial pretreatment program to regulate pollutants contributed by non-residential users. The appropriate response may require program/study development and implementation, engineering feasibility and alternatives development, alternatives screening and selection, engineering pre-design, design, and construction.

6 REQUESTED TIME SCHEDULE

As shown in Table 1, based upon results of past effluent monitoring, the SMD 1 WWTP effluent concentrations have exceeded both of the proposed alternative effluent limitations. The SMD 1 WWTP will have difficulty consistently complying with the proposed effluent limitations until sufficient testing has occurred to demonstrate the performance of the Upgrade Project; changes have been made in wastewater treatment plant operations; and/or other remedies have been identified and implemented. Adequate time is required for treatment plant startup and performance testing; initial data evaluations; engineering feasibility and alternatives development (including initiation of special studies, as needed), alternatives screening and selection; and pre-design, design, and possible construction of facility upgrades. A performance period is necessary in accordance with State Revolving Fund (SRF) Loan requirements.

Compliance with the proposed Chloroform and TTHM effluent limits will require construction and operation of treatment plant improvements. The SMD 1 WWTP is expected to meet the proposed limitations through the ultraviolet light (UV) disinfection process, which is included in the SMD 1 WWTP Upgrade project. The UV disinfection process will replace chlorine disinfection. However, the ability to comply with proposed limits for these constituents cannot be fully ascertained until the Upgrade Project becomes operational and effluent data are collected. The UV disinfection facilities do not remove these constituents, but significantly reduce the potential for generating these disinfection by-products during wastewater disinfection.

The proposed time schedule is summarized in Table 2.

Table 2 shows the estimated duration for each of the required tasks and the estimated completion dates. Since the project may be at least partially funded using an SRF Loan, a duration of 5 months is proposed for obtaining bids, and receiving Approval-to-Award and an SRF loan agreement from the SWRCB. Further, a 36-month construction period is needed because the WWTP upgrades must be constructed sequentially while the existing treatment facilities remain in service. Upon completion of construction, 4 months has been provided to startup, test, and optimize the treatment process.

Table 2. Compliance Schedule – Chloroform and Total Trihalomethanes.

Task	Estimated Duration (Months)	Estimated Completion Date
Award final design and environmental consultant contracts	---	May 2010
Design improvements and prepare California Environmental Quality Act (CEQA) document	13	31 July 2011
Complete final design	---	31 July 2011
Complete CEQA document	---	31 July 2011
Obtain bids and project funding, and award construction contract	5	31 December 2011
Construct improvements	36	31 December 2014
Startup and performance testing	4	30 April 2015
Full compliance with effluent limitations	---	1 May 2015

7 REFERENCES

7.1 Literature Cited:

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